BIRD LORE

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BIRD-LORE

A BI-MONTHLY MAGAZINE DEVOTED TO THE STUDY AND PROTECTION OF BIRDS AND MAMMALS

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THE PRESIDENT'S PAGE

ESTABLISHMENT by executive order of President Roosevelt, on October 27, 1938, of the Great White Heron Refuge in the western keys of Florida will be welcome news to all nature-lovers. For several years the members of the National Association of Audubon Societies have been anxiously watching the census counts that were indicating a recovery in the population of this wonderful bird of seven-foot wingspread. Throughout this period concerted efforts by our staff have worked toward the end of assuring the safety of the species in Florida Bay, its only range.

That the sanctuary program of the Association is developing apace may be realized from the report in this issue of BIRD-LORE. As fast as experience in the field has yielded specific information concerning areas which might best be maintained for the express purpose of protecting concentrated breeding colonies, and of rescuing threatened species from the brink of extinction, it has seemed wise to seek to obtain the right to administer or patrol such areas and to fix the responsibility and guardianship upon federal, state or other competent agencies.

In the shallow lagoons between the barrier islands and the mainland coast of Texas lie series of small islets, many of which are colonized by water-birds during the nesting season. The Association has now concluded arrangements with the State for leasing ten such islets and will henceforth enjoy the right to post and patrol them.

It is a definite part of our sanctuary program to seek to have set aside, under appropriate administrative auspices, all sites that can be shown to be of strategic importance in the preservation on this continent of an adequate breeding stock of all native birds.

Robert Cushman Murphy

From Wildfowling with a Camera by *Lorene Squire*. Cop. 1938. Courtesy J. B. Lippincott Co., Publishers

Fig. 1. "Young Ducks respond to the stimulus 'wet feet . . .'"

BIRD-LORE

NOVEMBER-DECEMBER, 1938

Why Do Birds Behave as They Do?

By N. Tinbergen

Lector in Experimental Biology, University of Leyden

PART I

WHY do we feed our children, play with them, work with them, educate them—and seek the best ways of doing all this? We want them to become good, valuable adults, and this goal continuously influences our thoughts and actions.

Why does the mother Blue Jay brood her tiny naked young, feed them, keep their nest clean? Certainly *not* because she wants them to become handsome adult Blue Jays!

You may not agree with me (and I confess I have put the difference a little bit too rigidly), but please keep an open mind, and consider the facts I shall present, while we discuss the behavior of birds.

Although I happen to be an animal psychologist, one of those blessed people who get money (though not too much) for being curious about the ways of our fellow-animals, I must say at once that I cannot satisfy the reader's curiosity and tell him exactly why animals behave as they do. (In using the word 'animals,' of course I include birds.) For I must confess that we don't understand very much about animal behavior and that we are only making a beginning in finding out exactly what we want to know about it. Science is the art of asking questions, and to find the best questions is our primary concern. One fool can ask more than ten wise men can answer, and as the scientist has to play the part of fool and wise man at the same time (but in the unfair proportion of one fool and *one* wise man!), he soon realizes—and the reader with him—that he has undertaken an overwhelming job. An additional difficulty is that for every answer that may be found after painstaking research, many new questions bubble up, thus keeping curious Man busy . . . and happy.

Animal psychology, or the organized attempt to understand why animals behave as they do, is as old as the other natural sciences. Why

Photo by A. D. Cruickshank

Fig. 2. Why does the mother Blue Jay feed her naked young?

is it that those other sciences, physics, chemistry, even animal physiology, have made such brilliant progress, while psychology, according to so many scientists, cannot yet be called a science at all? This has been due to the difficulty of discerning the problems, and I think I know why this has been so difficult.

It is, in a sense, not difficult to find out why a stone falls (if one does not ask too precisely). Attraction by the earth forces it to do so. Neither is there much more difficulty in answering the question as to why blood flows to the head. The heart pumps, as do the arteries. We should never think of 'explaining' the movements of the blood or the heart by saying that they are afraid that the brain will not get sufficient oxygen and might quit working! Yet, as a bird drives a cat away from its nest, we are apt to conclude that it does so because it 'is afraid that the cat will eat its young.' This answer, however, is definitely wrong, and even doubly so. First, we don't know whether or not the bird is afraid, and if we call its state of mind 'afraid,' we use a word and *nothing more*—instead of a more explicit description of the behavior. Second, we don't know whether or not the bird has any knowledge that the cat can kill and eat its young. So our 'explanation' consists of two unproved assertions, and it is obvious that both assertions can *never* be proved, because the bird has no means of telling us whether it feels or knows anything.

A simple example will show that we have good reason to believe that the function (the 'goal') of an animal's activity does not determine this activity. The European Cuckoo is a parasitic bird, like the American Cowbird. It is, however, much more specialized: the young Cuckoo, hatching in the same nest as the young of its foster parents, soon throws its fellow babies overboard, where they perish. Such a pitiable baby will sometimes lie on the nest's rim for a long time. The parents will never help their young; they do not even feed the young on the rim of the nest. But they brood and feed the Cuckoo. Apparently they have not the slightest idea that the function of their parental activities is to raise their own offspring and not a parasite. We shall see later that the parental behavior is caused, not by 'knowledge' of its end-effect, but rather by certain stimulations from within and without, to which the birds react 'blindly.'

Why are we apt to assume such subjective processes as 'emotions,' 'knowledge,' 'insight,' etc., to be the causes of behavior, and why don't we make that mistake when studying the movements of the blood and the heart? Perhaps because we, ourselves, experience those subjective processes by that amazing faculty we call 'consciousness.' The trouble is that we only know our *own* consciousness, and even if we take our conscious emotions as *causes* of our own behavior, we may be quite wrong. But that is another question.

Let us study the Cuckoo's foster parents a little more. Though the birds may fail to brood and to feed their chilled baby outside the nest, they may brood it again if we place it back into the nest. But they will *not* feed it, at least at first. By close observation we see that the replaced young does not beg with gaping mouth, as it did before, and as its Cuckoo mate still does when a parent bird alights on the nest with food. When the young becomes warm it will again gape and the parents will feed it. By a variety of such experiments it can be shown that the parents' feeding behavior is released only by gaping young in the nest. I have taken a rather out-of-the-way example of a Cuckoo-in-the-nest, but the conclusion about the parents' behavior holds true for all birds that feed their young. It has, for instance, often been observed in birds of prey—which divide large prey into small bits, to be fed to the young one by one—that the mother feeds most to those young that make the most intensive begging movements and sounds. Often one of the young is abnormally weak, but instead of getting the best parts, it gets least of all, because it does no, or little, begging, and consequently it dies.

Many birds have a special reaction that serves to remove foreign objects from the nest. A blundering grasshopper, a fallen leaf, are picked up and carried away. If we add the egg of another bird to the clutch, the bird will throw it out, too, provided the egg differs sufficiently. If we remove all the eggs but one, and replace them by an

Photo by Jan P. Strijbos

Fig. 3. "The young Cuckoo throws its fellow babies overboard..."

equal number of strange eggs, we witness a most extraordinary thing. The bird, returned to the nest, will throw its own egg out and brood the others! It was not, therefore, the situation 'a strange egg in the nest' that induced the bird to throw it out, but 'an egg different from the rest.' The abnormal condition demonstrated the bird's lack of understanding of the 'goal' of its actions. So these (and many other observations) show that many of a bird's activities, which at first seem to prove that the bird has some 'knowledge' of the purpose of the behavior, are instantaneous reactions to special situations in the environment. A few additional facts may be mentioned to support this conclusion. Young Ducks react to the stimulus 'wet feet' by trampling, a reaction that serves to stir up food in shallow water. They do the same when they happen to step into their food-cup containing bread and milk (incidentally, not the best food for a duckling). A Swan, which prefers swimming to walking, walks only on dry ground, and, when stimulated by wet feet, sits down and makes swimming movements. Heinroth observed them do the same in a one-centimeter layer of water on the ice.

I once gave a Herring Gull red

wooden eggs instead of its own. The bird returned to the nest, hesitated, picked vigorously at the eggs, but could not resist the sight, and sat down to incubate for hours. Analysis showed that the eggs evoked the pecking reaction by their color, and the sitting reaction by their shape. One thing evoked two reactions at the same time, and the Gull incubated undisturbed as long as he did not see the eggs, but could not help picking at them as soon as he saw the color.

A further remarkable point is that the readiness of a bird to do certain things, *e.g.*, to brood eggs, or to feed young, is dependent on internal chemical stimulations by certain agents carried by the blood. Although one might assume that a bird would 'know' equally well in autumn as in spring that a young bird must be fed, no bird will be ready to react to gaping youngsters outside the season. When the internal bodily state does not activate the parental behavior pattern, no external stimulus can evoke the reaction. This, again, does not fit in with the naive idea that the bird has any knowledge of the goal of its activities. Internal and external stimuli determine the course of behavior.

One kind of internal stimulus deserves special attention. It is often assumed that an animal, for instance a dog, shows food-seeking behavior only when it is hungry. This is not true. Many dog-owners know that their dogs can by no means be kept from indulging in a hunting excursion now and then, though they may be thoroughly well fed. They certainly need not be stimulated by external conditions to do that; the urge comes 'from within.' There is evidence for the conclusion that such internal *nervous* drives are at work in great numbers in every animal, causing special activities to 'explode' without apparent stimulus. Captive animals may often show sudden panics, resulting in wild flight, without any sign of external disturbance. They can't help running off.

Though our knowledge of the causes of these 'explosions' is still very fragmentary, their very occurrence is of the greatest importance in relation to a fundamental question of animal and human nature. There is an old stimulus-reaction formula that asserts every movement is a reaction to a stimulus. Everybody who believes in a human free will and spontaneity of action flatly refuses to accept the hypothesis that all our activities might be '*re*actions' and not 'actions.' Our knowledge of 'explosions' reconciles these opposing views; many of our activities may spring from quite another source than a mere external stimulus, however changed it may be, by learning processes. One could say: the idea of spontaneous action is saved by the 'explosions.' Nevertheless, a modern stimulus-reaction theory, which takes 'stimulus' as equivalent with 'cause,' cannot be rejected because, so far as our experience goes, every movement must be caused somehow.

We return to our birds. We have

seen that many activities are immediate reactions to occurrences in the external world. In order to be able to react to these external processes, the bird must have sense organs. As a matter of fact, the sense organs of birds are highly specialized structures, and their eyes, especially, are even superior to our own eyes. Though careful experiments are still sadly lacking, we know, for instance, that a Falcon has much sharper eyesight than we have; that is, it can see a given thing from a longer distance than we can.

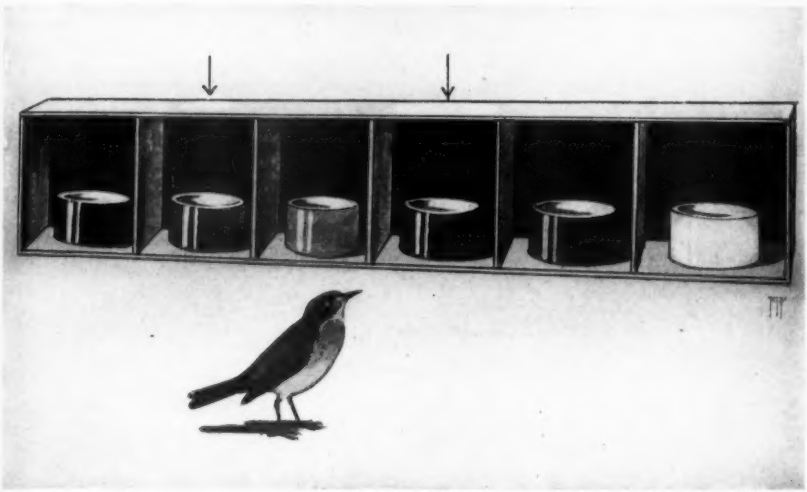
We know, further, that several species of birds can discriminate among colors very well. Biologists have developed ingenious methods to find that out. They trained birds to take food from specially colored cups only. They then offered them a whole row of cups, one of which had the same color as the original food cups, while the others were of different shades of gray. If the birds were color blind they would be unable to find the colored cup among the others, for it would appear to them to be similar to one or more of the gray cups. This is essentially the way in which human beings are tested for color blindness. The birds so far studied showed perfect color vision, however. Blue, though, was often confused with gray. By studying the anatomy of the bird's eye, the biologists found the cause of this poor sensitivity for blue; the retina contained millions of minute oil droplets of intense orange color. The bird thus sees the world through an orange filter. To what extent this orange screen diminishes sensitivity for blue can be judged by anybody who once wore snow glasses or used a filter for his camera.

Form discrimination, though limited in a certain sense, is excellent in many species. We know that a Herring Gull can recognize his mate among other Herring Gulls by appearance alone, from a distance of more than twenty-five yards, thereby revealing a discrimination power which is far beyond ours!

The sense of smell is rather poorly developed in most birds, though Ducks, and even song-birds, are not much worse off than man who, in this respect, is not very well endowed in comparison with many mammals. There are, however, among birds, 'smell specialists' like the Kiwi.

Most birds hear very well. In the Owls, the ear seems to be far better than in man, though accurate experimental proof is still lacking. When you happen to know a roosting-place of Owls, you can easily make some simple experiments on their acoustical faculties. Watch the roosting-place from shortly after sunset. Before it is really dark, the Owls will start their hunting flights. When they pass, just give a few squeaks with your lips, as an imitation of mouse or shrew voices. The Owls will turn and come back in searching, hovering flight to look for the expected quarry.

Sounds of different kinds play an important part in the life of probably all species of birds, and we know that the different call-notes,



Drawn by R. T. Peterson

Fig. 4. Thrush facing color discrimination test apparatus

the songs, and the danger-calls of a bird are readily understood and reacted to by its companions. Every bird-watcher has splendid opportunities to notice certain reactions of birds to sounds and calls under conditions that prove true perception as when, for instance, the calling bird is hidden from the reacting bird.

Besides these well-known sense organs, and the 'lower' senses of taste and the various tactile senses, migratory birds must possess some other sense organ that enables them to fly home through regions that may be unknown to them. Dr. Mayr discussed the evidence for this in BIRD-LORE (January-February, 1937).

(*To be concluded in the next issue*)

Wildlife Conference to be Held in Detroit

The Fourth North American Wildlife Conference will be held in Detroit, at the Hotel Statler, the week of February 13. The plan that was so highly successful last year, of having panel discussions conducted by outstanding authorities, with comments following from the floor, will again be utilized this year. Concurrent with these there will be technical sessions in which specialists in various fields will report on the newest scientific developments in the fields of restoration and wild-life conservation. Among the important topics to be debated in panel discussions will be pollution.

Photo by Allan D. Cruickshank

"He moves through the air while the air itself moves . . ."

Birds and the Wind

By **Neil T. McMillan**

Captain, Eastern Air Lines

WIND is the major influence in the life of a bird. It is a strong factor in his daily activities. His range and habits are controlled by the use he can make of the wind. During migration it is wind that sets the routes and schedules and is the primary cause of delays and accidents. In reality, it is the air that goes places and the birds go with it. Unless forced, a bird will not fly any great distance. Whenever possible, he rides the wind.

These are not statements of established fact made by an accomplished ornithologist but the personal beliefs of an aviator who freely admits that he has a better knowledge of wind than he has of the birds. Because his own work is controlled by wind, he is certain to regard both it and the bird in a different way than a bird student who spends the major part of his time at the bottom of the great ocean of air. Neither view is likely to be wholly correct nor is it likely to be entirely wrong. Because his beliefs may have some value, the writer welcomes this opportunity to tell of them.

To a bird on the wing, the wind is a vehicle or means of transportation —not a propelling agent. Through countless generations of living on the surface of the globe where two elements—air and land or air and water—are in collision, man came to associate wind with a pushing force that could vary in intensity, from a breeze that caressed his cheek to a tornado that hurled him to destruction. When he learned to fly, he found that as soon as he was free of the earth his old conception of the wind was wrong. What is true in aviation is true in ornithology. A bird is carried. He is never pushed or blown.

Although A. Landsborough Thomson and a few others have recognized it, there is much in the literature on birds to indicate that this essential truth has been missed. Such expressions as "flying in the teeth of a gale," "buffeted by high winds," and "blown far inland" are frequent. Several ornithologists have predicated their explanations of the way in which birds maintain their directions on the false assumption that a flying bird can feel the pressure of the wind. At least one has used mathematics to determine how much lift a bird can get from winds of varying velocities when the wind cannot strike a bird in the air. One authority has made the extreme statement that "strong

winds blowing in the direction in which the birds are traveling are—bad, since they interfere seriously with balance, and disarrange feathers."

A flying bird, which is essentially a part of the wind, cannot be struck by it any more than a man can be struck by the automobile in which he is riding. To obtain a true picture it might be better if the word 'wind' could be discarded and 'air current,' 'air stream,' or 'air river' substituted. This nomenclature may make it easier to understand that anything suspended in air cannot feel its movement. A log floating in the water of a river has no pressure exerted upon it. There is no water piled up in front. There is no wake. Viewed from the shore the log may seem to move but it is the water that is moving. In relation to the water, the log is stationary. The same liquid surrounds it at all times.

A balloon in the air is like the log in water. Although it may move over the face of the earth at fifty miles an hour the flag on its halyards will hang in a dead calm. It is the air that is moving, not the balloon. A bird cannot float like a balloon but he can accomplish the same result at the point where his own air-speed is sufficient to give him enough lift to balance gravity. He moves through the air while the air itself moves, just as a boat on a river moves through the water while the water moves. Like a boat, which will have the same pressure on the bow for any set speed in any direction, a bird will feel pressure on the forward part of his body in ratio to his own air-speed whether he moves up-wind, down-wind, or cross-wind.

Even if he rides a hurricane that is spinning at well over a hundred miles an hour, the bird will feel not an ounce more of pressure or have a single feather ruffled. So long as he stays aloft he will be in no danger from the wind but an attempted landing would be certain to result in disaster. The bird must ride out the storm or reach its calm 'eye' before he can alight. As a possible explanation of the many instances of birds being found in the 'eye' it might be of interest to note that the air of a hurricane spins inward and a bird riding the storm for any length of time must inevitably be carried to the center.

Only in collision can moving air exert pressure. That collision can occur with the earth and objects attached to it, or it can occur when a moving air-mass meets air moving in a different direction. Just as eddies and rip tides are visible evidence of opposing currents in water, so are many of our storms eloquent testimony of a battle of winds. A bird changing from one current to another is analogous to a man stepping from an escalator moving in one direction to another moving in the opposite. There is a distinct shock which is gone as soon as the change has been made. The bird, even though he may be flying slowly, is relatively fast for his size and makes the change quickly. Long dirigibles, slow for their size, have been literally sheared apart when straddling strong opposing currents. It is possible that birds receive painful wrenches under like

Photo by W. H. Nicholson

"A Kingbird can make life miserable for them . . ."

conditions and endeavor to avoid them.

Horizontal flight requires the most frequent change on days when the currents are vertical. An ornithologist has made the guess that migrating birds fly high on clear warm days because they are using rising air to give them lift. It is the guess of the writer that they fly high for the same reason that he does, to escape those currents. Nature abhors a vacuum. Air rising from the surface must be replaced and on the days in question the replacement comes from aloft. A 'thermal,' whether it is a steady stream or a series of bubbles of hot air, resembles a fountain. The air goes up but it also comes down. For every updraft there are compensating downdrafts and flight through them is a continual jarring and bumping.

The upper limit of these convection, or mixing, currents is usually marked by a layer of smoke and dust that has been carried aloft. Above it there will be a horizontal current of air into which the thermals cannot rise and where smooth flight can be maintained. The highest elevation at which the writer has seen birds was at 7200 feet, just above the dust-level near Port Arthur, Texas, where he passed a flock of twenty or more in light brown plumage. At an air-speed of 160 miles an hour he was upon them and had scattered and passed them before they could be identified. The significant feature of the occurrence is that the birds were going with a 22-mile-an-hour wind out of the west-southwest.

What were the birds? Whence had they come and where were they going? The writer would very much like to know, just as he would also like to know how, in April of this

Photo by W. L. Finley

"A Quail climbs with the speed and steepness of a pursuit plane . . ."

year, a lone Goose happened to be on top of a solid overcast riding a 30-mile-an-hour east-southeast wind over southern Alabama. Snap judgment would say that the Goose was lost and bewildered. But he may have 'known' exactly what he was doing when he chose to ride a wind, above the clouds, that was totally different from that underneath. He may have 'known' that wind never travels in a straight line, that a small arc of it, like a section of the horizon, may appear to be straight but is in reality curved. If so, he knew that the wind he was riding would carry him to the Mississippi flyway, that it would shift to southeast before he reached the valley, then to south-southeast and south.

This is, of course, pure guesswork and may sound visionary, except that it is no more preposterous to grant the Goose full knowledge of horizontal winds than to give definite knowledge of vertical winds to soaring birds. Obviously, a Turkey Buzzard gains altitude on a rising current of air. Using gravity for motive power, he noses down slightly in a remarkably flat glide and descends more slowly than the air is rising. When he has exhausted the lift of the ascending current or wishes to change position, the Buzzard sharpens his descent and glides swiftly across the neighboring down-draft. Whether he gains or loses altitude in the long run will depend on the length of time he is in the opposing currents, rather than on the strength of those currents. When using a thermal too small in diameter for him to turn in, the Buzzard employs the same tactics. In the part of his spiral that is out of the current he moves rapidly. When he strikes the rising air he pulls up sharply, so sharply, in fact, that

the end flight feathers of his wings open like the slots of a 'fool-proof' airplane to prevent a stall and loss of control. Watching a Buzzard will give evidence that he has a knowledge of and is using moving air.

It is certain that, in the daily life of soaring birds, wind is a necessity. They must have rising air. Without it they are all but helpless. Their large, high-lift wings make them excellent sailplanes and exceedingly poor flyers. A Kingbird can make life miserable for them. A difference in wings gives the advantage to the smaller bird.

It is the way in which he is designed that will govern how much or how little the bird can use the wind. Wing-loading, or the ratio between wing area and weight; aspect ratio, or the relationship between length and breadth; camber, the thickness of the wings; dihedral, the angle between the wings; and the other problems that beset the airplane designer, must surely control the efficiency of the bird. If he can make but little use of the wind his range will be restricted. If he can remain aloft with only slight effort he will roam like the wind from one far corner of the globe to the other.

A Quail takes off and climbs with the speed and steepness of a pursuit plane but he cannot long maintain the great amount of energy which this entails. He gains altitude rapidly and then glides, preferably down-hill or down-wind. This necessarily confines the Quail to short flights and he does not wander far from his birthplace. His neighbor, the Dove, climbs at a lesser angle and uses less energy. But without a great amount of lift, the Dove must fly rapidly to remain aloft. On his whistling wings he ranges farther than the Quail but he falls far short of the yearly journeys of birds with more efficient wings, which use less energy and can maintain lift with less speed.

Apparently, this speed is, in many cases, surprisingly low. Watching Herring Gulls from the docks in New Orleans, the writer has seen them hover in light breezes which he estimated to be between 5 and 10 miles an hour. Beating their wings very slowly, the Gulls matched the velocity of the wind with their own air-speed and remained over one spot in relation to the earth without gaining or losing altitude. Even if the larger estimate of the wind's velocity is taken, the resulting figure of 10 miles an hour is far short of the 40-mile speed with which migrating Gulls have been credited.

From personal observation on the airport of New Orleans, where the Gulls flock when a stiff wind blows off Lake Pontchartrain, the writer believes that 40 miles an hour is too high for even the maximum speed of the Gull. On two occasions when the airways weather station was reporting winds of 27 and 28 miles an hour, only a few of the Gulls, when forced to take off, could make headway. These were the young in brown plumage. A few of the adults were able to match the wind but the majority were carried backward and dived

to a landing. The maximum air-speed of the Gull, therefore, would seem not to exceed 30 miles an hour, and may be less. The anemometer is on the roof of a three-story building and none of the birds reached that height, but stayed low where friction was reducing the velocity of the wind.

The conclusion the writer draws from these observations is that when the migrating Gull was timed at 40 miles an hour, he was riding a 30-mile wind. It may be argued, of course, that the Gull was flying 30 miles an hour on a 10-mile wind, but that seems contrary to efficiency. Under the dynamic law that pressure increases as the square of the velocity, it would take something like nine times the energy to propel the Gull at 30 miles an hour that it does at 10. Even if it is granted that a bird can change both his angle of attack and angle of incidence—the angle at which his body and wings strike the air and the angle at which his wings are set to his body—the energy necessary to fly at full speed must be out of proportion to the gain in velocity. To the writer it seems illogical to suppose that a bird, unless forced, frightened, or playful, will fly at anything but the speed at which he uses the least energy. A man can run, but he usually walks. The writer prefers, therefore, to believe that the Gull, when timed, moved through the air a distance of not more than 10 miles while the air itself moved 30 or more and that the Gull rode the wind as surely as a man rides who walks through a speeding railroad train.

In an hour the Gull flew 10 miles and covered 40. In five hours of effortless flying he could have traveled 200 miles or in ten hours, 400. If, for the Gull, we substitute a land-bird and increase the velocity of the wind, we have a natural answer as to how and why migrants, without becoming exhausted, cross the Gulf of Mexico in a single night. They ride the overhead gales that pour spring into the eastern half of the United States.

This explanation was forced on the writer after a spring night two years ago. On that night he took an airliner off at New Orleans, bound for Atlanta, in a fresh southerly wind that increased in velocity to 60 miles an hour and shifted to south-southwest at 3000 feet. Even with throttles pulled back to reduce his air-speed, he arrived at Mobile and Montgomery far ahead of time. Northeast of Montgomery the warm air began to overrun cold air at the surface, as scud clouds beneath him attested. At Atlanta he landed down through these clouds into a cold, northeast wind, although the southerly gales were still aloft. The next morning the woods around his home just outside of Atlanta were literally alive with migrants, noisily happy in spite of the cold rain that was falling. There was a natural deduction to be made—the birds had ridden across the Gulf and as far inland as they could before being forced too far aloft by the warm air running up the slope of the cold.

From this deduction it is only a step to the general hypothesis that, whenever possible, migrating birds

Photo by Allan D. Cruickshank

"the Dove . . . uses less energy"

ride the wind. It is, perhaps, the most natural explanation that can be given, not only for their crossing the Gulf of Mexico on what is a veritable Gulf Stream of the air, but also why they seem to follow rivers on valley winds—why they use mountain ridges and seacoasts when a quartering wind creates a surf that will give them both lift and direction—why the Golden Plover can ride non-stop from Nova Scotia to South America around the rim of the 'Bermuda High' but cannot come back the same way—why land-birds caught in a 'cold front,' or strong wind-shift, over water must perish because the battling winds will not allow them either to retreat or advance—why migrants land and wait for days with a change of weather, for a change of weather is a result of a change of winds—and finally why the bird's arrival and departure dates fluctuate just as the schedule of the winds fluctuates.

Spring and the birds came early in 1938. Was one the cause and the other the effect? Why not say that both are effects of the same cause—that the influx of tropical air came early this year? The birds migrate and the wind migrates. While it is a tilted earth moving in its orbit that is the actual performance, the effect to us is that the sun also migrates. The solar equator comes north in our spring and goes south in our fall, carrying with it the doldrums, the trade and anti-trade winds, and the prevailing winds in both hemispheres. Just as off-shore and on-shore winds or mountain and plain winds are the effort of Nature to equalize temperatures between adjacent areas during night and day, so are monsoons an attempt to balance the heat of the atmosphere

over the seasons. Just as land and sea breezes attain their maximum not at midday or midnight but in the afternoon and early morning, so do the prevailing winds flow fastest in spring and fall exactly in time with heaviest migration of the birds. In a large-scale picture the two phenomena appear to fit exactly. Will they also match when examined in detail? The writer believes that they will if we are careful to look at those details from the viewpoint of the bird and not our own.

There can be a wide difference in the two viewpoints. On the night of September 8, the surface wind on the Atlanta airport was 3 miles an hour out of the southeast, while the wind aloft from Washington to New Orleans was out of the northeast quadrant of the compass with an average velocity of 20 miles an hour. While circling the field, the writer turned on his landing lights to warn other pilots of his position. At 900 feet off the ground, two small birds streaked like meteors through the glare of the lights. At 700 feet a third struck the under side of the fuselage with a pistol-like report. Three birds do not make up a migration nor can it be proved that those three were flying down-wind. All that is certain is that the air was moving southwest, that there were at least three birds in it, and that a ground observer could have been ignorant of both facts unless he had examined the weather map and the 'winds aloft' report and had been able to see the birds against the face of the full moon that was shining.

It is easy to add two and two although the sum obtained may not be the correct answer. It is easy to conclude that migrants ride the wind when birds are found going with it. When it is known that wind and weather are practically synonyms, it is easy to run through 'The Season' reports in BIRD-LORE and change 'cold weather' to 'northerly winds' and 'warm weather' to 'southerly winds' and be pleased to see that migrants arrive with them. When one is looking for just such a similarity it is easy to see the sameness between a map of the migration routes and a map of the prevailing winds. When it is known from experience and study that an advancing cold front crowds and lifts the warm air in front of it, it is natural to assume that bird traffic should be crowded into a wave as automobile traffic is jammed in a bottleneck, and find verification for this assumption in the reports of watchers. To be conservative, it must be admitted that such similarities between the movement of the wind and the movement of the birds may be indications that the migrants are riding the wind, but they are not proofs.

Positive proof will be difficult to obtain for it will be necessary to know the starting and arriving points, the exact time and the weather conditions over the entire route at the *level* at which the birds fly. Most observations must, of necessity, be made from the ground at the very point where conditions are the most likely to be

different from those under which the birds travel. Weather not only has length and breadth but height, and the most rapid change is vertically. Temperature, humidity, wind direction, and wind velocity will all be different at 500 feet when there is but little change in miles along the surface. Seacoasts are a vantage-point for observations and seacoasts are notorious for wind-shifts close to the surface. All of this imposes a handicap to proving beyond question that whenever possible birds migrate by riding the wind but it is a handicap that should work both ways. It should be equally difficult to prove that they do not.

The writer has been told that it is the general belief of bird students that the contrary is true—that, while migrants prefer a quartering wind to the rear, wind and weather are really of little concern to them. If this belief is founded on a correlation of bird movements with surface conditions a shadow of doubt can fall upon the correctness of it. If an observer sees birds from the south land into a cold northeast wind during a warm front snowstorm, it would be natural to assume that the headwind and the storm meant little to the birds. But somewhere over that observer's head there is certain to be air that has come from the same general region as the birds. Contrary to what our heritage has taught us, snow does not come from the cold, dry regions of the earth but from the warm and moist. The cold air at the surface is only the precipitating agent that is forcing the warm air aloft and chilling it by expansion to the point where it can no longer hold its moisture. As the average slope of a warm front is one to three hundred, the birds can be 90 miles from the actual front and still have a tail wind as low as 1500 feet.

Just as the observer could be wrong in his deduction while watching descending birds on stormy days so he could be wrong while watching migrants on clear days when one air mass is in full possession of his territory. The gradient wind tends to follow the isobars, or lines of equal barometric pressure, while surface wind cuts across them at an angle. The truth of this statement can be easily verified by reference to a weather map as meager in details as that which appears in our daily newspapers. Immediately off the surface the wind begins to turn until between 1700 feet and 3000 feet it has attained its true direction and velocity. A quartering wind on the ground will, in all probability, be a direct tail wind aloft. Is it not possible, therefore, that bird students have actually observed that migrants prefer tail winds?

Perhaps it is true that they do. Perhaps it is only fancy born of the writer's own natural desire for clear sky and a tail wind. Whether true or false, there is one fact that is certain: the winds are there for the birds to use. All they have to do is choose. Sir Napier Shaw in his book, *The Air and Its Ways*, has likened the circulation of the atmosphere to a steam engine run by the heat of the sun. The spinning

Photo by R. T. Peterson

Herring Gull

cyclonic and anti-cyclonic areas he has called the fly-wheels of that engine. In his own words, he says, "the constituent parts of the fly-wheel at any time are the natural air-ways of the world." He was speaking of aviation when he made the statement but, in the opinion of the writer, he might better have spoken of the birds. Perched on the spinning wheels and the whirling belts, they are riding the natural fly-ways of the world.

Watch for Colored Bands!

Readers of BIRD-LORE are again requested to be on the lookout for Herring Gulls wearing colored celluloid bands. This past nesting season several thousand young birds were banded, and these Gulls, in first-year plumage, are already being reported at various points along the northeastern seaboard. There are now Gulls in first- and second-year plumage and several hundred adult Gulls marked with colored bands so as to indicate the colonies from which they originated. New color combinations were employed for the 1938 birds and additional banding stations added to the original list. Observers should note the order in which colored bands appear on the leg of the bird, but need not differentiate between right and left leg. Reports should be sent to *Gull Survey, American Museum of Natural History, New York City,* and should include date of observation, exact location, notes—if possible—on the plumage of the banded birds, and a very careful description of the position and colors of the bands.—R. P. A.

Let the Dummy Do the Work!

By **Maurice Brooks**

With Photographs by Fred E. Brooks and the Author

SO GREAT has become the popular interest in feeding birds, and so varied are the devices by which they may be attracted, that any article dealing with the subject may seem superfluous. Nevertheless, in experimenting with dummies as bird attracters, my father and I derived so much enjoyment over a period of years that the amateur may garner a new idea and even the professional an added wrinkle for study and photography. Some of our results have been described (Brooks, F. E., *Nature Magazine:* Vol. 21, No. 5, 1933, pp. 231–233), but the whole story, step by step, has not been told in an ornithological journal.

Anticipating a bit, I may say that the devices hereinafter described have brought to our hands, heads, pipes, and lips, Chickadees, Tufted Titmice, White-breasted Nuthatches, Carolina Wrens, Juncos, Tree Sparrows, Downy Woodpeckers, and even White-throated Sparrows and Cardinals, not when we were concealed in a blind or behind a curtain, but when we were standing fully exposed. Within touching distances have come Song Sparrows, Hairy Woodpeckers, Red-bellied Woodpeckers, Towhees, and even the usually shy Bachman's Sparrows.

Do not imagine that these results were achieved only after hours of exposure or as a result of endless patience on our part. It is true that some of our friends suspected us of black magic; but the only black magic used was that inherent in the old coat and battered felt hat of the dummy man who did our work for us. Day by day, through rain and snow, storm and ice, he tendered his offerings to the birds, while we waited in comfort inside until they were habituated to him.

Just here, let me pay tribute to the black walnut as the bird food without a peer. Around our home we have tried systematically every food which we have ever heard of as being attractive to our winter birds. Suet, 'cracklings,' meat rinds nailed to a tree, sunflower seed, peanuts, cracked corn, scratch feed, bread and biscuit crumbs, raisins—all have their uses, but the black walnut is king of the lot. Indeed, most of our winter birds favor it beyond all these other foods combined. It used to be stated that the Tufted Titmouse so definitely preferred an insect diet that he would not come to a feeding shelf

when insects were abundant. When offered black walnuts, however, we found him scarcely less eager to visit us in summer than in winter. Other birds were equally responsive, and I am convinced that some of the rarities visiting our feeding shelves would never have responded to any other lure.

Early in the game we learned that almost any methods would attract some birds, but that some *finesse* was required in bringing others close to our home. Too frequently food was provided, but that other essential, cover, was forgotten. In the bushes and trees at the edge of the yard were to be found birds that never seemed to reach our feeding places, and naturally these unattainables seemed to us the most desirable of all. Finally, a shelf was mounted on a sharpened stake and placed near the bushes about fifty feet from one of the kitchen windows. An abundant food supply was provided, and we presently found that six or eight species of birds which had refused to come to our window shelves were here feeding regularly.

After about two weeks this shelf was moved ten feet nearer to the house; the birds were a bit confused for a time, but presently grew accustomed to the new location. Another move brought the shelf still nearer, until, by successive steps, we had tolled to a point just outside the window all the birds which had been feeding at a distance.

This is the point, perhaps, at which most bird feeding stops. One day, however, it occurred to us that a dummy hand might be constructed in such a lifelike manner as to fool the birds. An old leather glove was selected, stuffed full of paper and rags until it was forced into the semblance of a cupped human hand, and nailed to a stick about fifteen inches in length. An old coat sleeve was pulled over the stick, and the whole device was fastened to the window sill in such a manner that it extended almost to an established feeding shelf on the sharpened stake. In this cupped hand black walnuts were placed, and the banquet invitation was left to the pleasure of the birds.

At first they were quite shy, coming hurriedly to the regular feeding shelf, but frequently flying away nervously without taking any food. Just here we began cutting down on the supply of food placed in the regular container, until within a day or two only the dummy hand offered the food which the birds wanted so badly. It was not until the third day that we saw a bird, a Tufted Titmouse, tentatively light on the glove. Evidently he did not like the feel of the leather under his claws, for he flew away quickly. Presently he, or another of the same species, returned, and after a few ventures of this nature, a kernel of the walnut was seized and carried away. This seemed to break the ice, for before the day had closed a number of Titmice were coming regularly, a few Chickadees had made the venture, and just at dusk a Carolina Wren actually fed from the glove for several minutes. Our black walnut kernels were disappearing almost as fast as we could put them out.

During succeeding days we found

Offering food throughout the day, through fair and stormy weather, the dummy wins the confidence of the birds

that other species were gaining confidence, and we made it a point to spend much time near the window nearest to the dummy hand. Here again I must anticipate in order to keep the record straight. We learned that our presence at the windows was not necessarily alarming to the birds so long as we made no abrupt motions. Neither were normal sounds objectionable, and we came to consider these movements and sounds an integral part of the birds' training. Another point we found to be very important. The birds became used to a closed window, and when we first opened it they were so alarmed and nervous that they refused for some time to come to the stuffed glove. Noting this, we made it a rule to raise the window to varying heights whenever the weather permitted, and in this way they became used to its different appearances. I am convinced that without this training they would not have come to our hands at all readily.

After a few days of such preparation, our next step seemed obvious. Selecting a winter day when the temperature was not severe, we took the dummy glove and its stick down, pulled a similar glove onto one of our own hands, cupped up the fingers to hold black walnut kernels, and placed an elbow on the sill, the hand extending the invitation and the feast. I shall never forget with what excitement I took my turn at the new game. Hardly had I gotten settled before a Tit-

mouse dropped quickly onto my hand, seized a piece of walnut, and was gone, only to make way for another visitor of his own species. Within fifteen minutes I was reasonably certain that at least six Titmice and four Chickadees were coming regularly, and when I withdrew my hand to replenish the walnut supply they seemed to be waiting impatiently for its reappearance.

During this first experience I had my share of 'beginner's luck.' Only a few minutes after I had extended my hand, a Cardinal flew to it and, without any apparent nervousness, took a kernel. This seemed almost too good to be true, and it was! Since that time not a single Cardinal has ever voluntarily come to my hand to take food. Some of my friends have had better luck, but it was denied to any member of my family.

For some days following I am afraid that work suffered around our home. Turns were taken at the favored position by the window, and we found our visitors increasing steadily in numbers and variety. The White-breasted Nuthatches were next to develop confidence, and, once they had learned to come at all, they did what the Titmice and Chickadees would not —stayed on the hand for some seconds or even minutes as they inspected all the walnut kernels present. Their 'instinct' for the biggest kernel was almost infallible. Occasionally also a Carolina Wren would spend some time on the hand, particularly if the walnuts were left in the shells where the bird had to work to extract them. Downy Woodpeckers found the food acceptable on our terms after a while, and we soon learned to facilitate their approach, as well as that of the Nuthatches, by placing dead branches near enough our hands so that the birds could reach the food without leaving the familiar and reassuring wood and bark on which they preferred to alight. Juncos and Tree Sparrows made tentative calls, but we never felt that we had completely won their confidence.

A few weeks of such experience as is detailed above convinced us that the dummy idea had further possibilities. It seemed a natural step to use a dummy man in place of a mere dummy hand, so we set about securing some fairly convincing human replica. At first we tried local clothing stores, thinking that they might have stored away some place one of those hideous wax men, heavily mustached, which used to adorn show windows. We finally located one, but the owner felt that it would require fifteen dollars to salve his conscience in making the separation, so we decided that it would be cheaper to construct our own model. From Dr. Robert T. Morris, my father had got the idea of growing gourds for possible bird homes, and although we had not found the birds rushing to build in our gourds, we did finally find an ornithological use for these vegetables.

Selecting one of about human head size, we pulled over it an old white stocking. This was the basis for our dummy's face. The curved

handle of the gourd made an excellent Roman nose, and pieces of coal were inserted to represent eyes. A mouth and chin were added, and some frayed-out burlap sacking made a convincing suit of hair. A cross-piece nailed to the top of a sharpened stake furnished the framework of the body and over this we draped an old black coat. The head was attached, collar and tie added to give a touch of style, and an old black hat placed over the burlap hair. As a final touch, a corncob pipe was placed in the dummy's mouth, the bowl hollowed out to hold walnut kernels. Our Frankenstein was now ready to go to work.

Ten or twelve feet from our established window feeding shelf the dummy was set up, the sharpened stake facilitating the operation. As was to be expected, the birds were much alarmed, and for several hours we did not see a visitor to our shelf. Finally a few individuals made the venture, and within a few days we found them coming about as freely as before. The dummy was now moved nearer, with another nervous period resulting, but it was not long until he stood a scant three feet from the shelf. Soon there came one of those evenings when birds feed desperately, the beginning of a snowstorm, with the first big flakes drifting down. Apparently forgetting the strange visitor, dozens of birds, Juncos, Tree Sparrows, Titmice, Chickadees, Cardinals, and the rest, flew to the shelves and the ground below, and from that time on they seemed to come without hesitation.

On snowy evenings birds swarmed to the dummy. Juncos, Tree Sparrows, and Cardinals appear in the photograph

The man substitutes for the dummy

Presently we filled up the bowl of the corncob pipe, crushed down the crown of the dummy's hat until it would hold walnuts, and began to cut down on the feed placed on the shelf. Quickly enough most of the birds learned to visit the hat or the pipe.

As before, our next step seemed clear. One day, when the weather was not too severe, the dummy was taken down, placed out of sight, and the familiar hat and pipe assumed by a human being who stood where the scare-crow had been. We never quite knew whether or not it was complimentary to us, but most of the birds seemed to detect little difference in the situation! Without hesitation they came to hat, pipe, and hand, relieving us of walnuts almost as fast as they could be supplied. Slow movements did not frighten them, and we soon got in the habit of talking to them ('baby talk,' and some of it pretty silly, I am afraid). We did learn presently to avoid looking directly at the visiting bird, for, as has been so frequently observed, wild things watch the eyes of possible enemies, and these birds frequently took alarm when we looked full at them. The slow movement of hand or head, however, seemed to suggest to them nothing more than the swaying of a branch in the wind.

It happens that my father was somewhat on the spare side, while I am more given to embonpoint, so we decided that both of us should have dummies, each after his own likeness. With two such robots available, we found that we could place them in different situations, and that the birds soon came to associate them with food. After a time they made the association with human beings who stood still for a

few moments, and presently we found that some of them were following us about the place, begging for food, and taking it whenever and wherever offered. At last we felt that we had pretty well won their confidence.

Only the Chickadees, Titmice, and Nuthatches came to us freely; it took a long wait for a Downy Woodpecker or a Carolina Wren. Once, greatly to my father's surprise, a Red-bellied Woodpecker alighted on his hat as he stood quite still. Such ground-feeding species as Juncos and Tree Sparrows were never at home on our hands or hats, although they did make infrequent visits. Cardinals fed regularly on the dummies, but no amount of patience would bring them to us when we substituted. From this we derived a grain of comfort, for it looked as though at least these birds could discriminate between the animate and inanimate bodies!

Titmice and Chickadees seldom remained on our hands more than a moment, although they were a bit more deliberate on pipe or hat; the feel of the corncob or felt seemed to suit them better. I have seen Chickadees, however, that remained on the hand to sort over every piece of nut contained therein. Once we tried placing a walnut kernel under a small pile of peanuts. One of the tamer Chickadees came, turned its head from side to side, carefully picked up and threw away every piece of peanut, and then flew away with the walnut. The Nuthatches often remained for several seconds or minutes, and Downy Woodpeckers, once they had made their deliberate approach, would regularly spend some time hammering out the walnuts we had left in the shells. I have more than once had the force of their blows on my head become distinctly uncomfortable.

Given the choice of flying to my father or to any other person nearby, most of our birds chose the former course. We tested this out in a number of ways, many times stationing one or more persons, their hands offering walnuts, between the birds and my father. About three out of four times the birds would fly past the offerings of the other individuals directly to the person with whom they seemed to feel most at home. I cannot explain this, since other members of the family spent nearly as much time with the birds as he did. Some of the Chickadees, however, developed a preference for being fed at our kitchen door. They learned (is this good psychology?) that our attention was attracted when they clung to the screens on windows or door, and they would hammer at the screen with their bills if we were a bit slow in holding out the food. Presently they began to search us out in the house, even when we were on the second floor, using their bills on the screens to make known to us their wants.

One day my mother happened to be watching a stranger as he rode horseback along the muddy road in front of the house. Suddenly a Chickadee dropped to his hat, remained a moment, and then flew up to a telephone wire. Feeling the

slight contact, the rider stopped, looked about in surprise, and started on. Not satisfied by his first visit, the Chickadee again flew down, evidently hoping that the hat might contain food. The stranger whirled, jerked off his hat, subjected it to a severe scrutiny, then turned to survey his surroundings in every direction. Near him sat a tiny bird, but that made no sense, and after a time he slowly rode away, figuratively, if not literally, shaking his head. I have no doubt that he still believes our place haunted.

Surprising to us were the distances from the house at which our tamed birds sometimes located us. One of our trails led through a piece of dense deciduous woods, a mile or more from the regular feeding shelves. Often enough, when we were walking this trail, we would hear a familiar note, and, when we offered a walnut, a bird would drop to our hands. One of the most pleasing developments was the habit of meeting us three or four hundred yards from the house when we were returning from the village. For several years I taught school nearby, walking when the roads were too muddy for driving. Some distance from the house, and completely out of sight over a hill, was a brushy field through which my path ran. Here, each evening as I was returning from school, I was met by a pair of Chickadees, and you may be sure that I always had food for them. Whether they spent the day there, or whether they had learned my schedule, I am sure I cannot say.

We had working on our farm a rather saturnine individual who regarded with poorly concealed disgust the spectacle of grown men fooling with a bunch of little birds. After they began coming to us regularly, however, he dropped his comments, and we later discovered that he was carrying a supply of nuts, and was stopping work regularly to feed the birds when he thought he was safely out of sight. I am sure that, in the beginning at least, he would have felt disgraced for life had the villagers known of his actions.

Perhaps the most interesting feature of the whole taming experiment was its effect on our human neighbors and associates. Within a short time all the small boys, and some of the older persons, in the community were feeding birds, and many of them succeeded in taming them. Seven of my high-school biology students found time, in a single season, to carry on successful taming. One little girl wrote up her experiences, and won first place in the State in an essay contest

sponsored by the West Virginia Academy of Science. Some of the people who used the dummy device lived on farms, while others lived in coal mining villages. In point of fact, the methods have succeeded in town within a few minutes' walk of the campus of West Virginia University.

After a number of years of such experiences as have been outlined above, rather sudden changes came to the human beings on our farm. My father died, his last illness cheered by the fact that Nuthatches and Chickadees would come for food to his bedside. A year or so later my work took me away, and the old farm was left without an occupant for the first time since it had been carved out of the wilderness by New England pioneers. We wondered (and worried about) what the birds would do without their accustomed winter food. Throughout the long winter I did not even pay the place a visit, but at the Easter season I drove my car to the village, and walked up the trail toward home. Just after I crossed the hill, in sight of the house, and entered the old apple orchard, I heard above my head a familiar note. When I drew a walnut kernel from my pocket, a Chickadee dropped to my hand.

Tomorrow

The rail will not walk again
Stilly from the dawn-bright grass
Into this same still space.
The curlew will not pass
And bend its flight like a swift wild reaper
Over our heads again
In this wave-wet place.
But where the water lies broken like purple glass
Between the palm hammocks,
The great cranes, bowing, pace.

—Juana Allraum Vogt

A Japanese Portrait of Audubon

THE lives of American and European leaders, no less than the general culture of the western nations, have served as important examples in the creation of modern Japan.

In the 'seventies of the last century, the Japanese educator, Nakamura Masanao (born 1831), published under the title *The Western Countries' Book of Successful Careers* a translation which appears to have been taken far more seriously in the resurgent Kingdom of the Rising Sun than its original had been in the West. The original was the *Self Help* of Samuel Smiles, which included accounts of pithy and determining episodes in the lives of Thomas Carlyle, Sir Joshua Reynolds, Josiah Wedgewood, Benjamin Franklin, John James Audubon, and many others. For the accompanying print of Audubon, the translation of the inscription, and the related information, BIRD-LORE is indebted to the Editor of the *Brooklyn Museum Quarterly*.

Portraits such as that of Audubon were among the last survivals of the old-fashioned Japanese color prints. They were published, presumably, in Tokio and sold in sets enclosed in an envelope as presents for boys. The legend on the print here reproduced is as follows:

"John James Audubon, the celebrated American ornithologist, when about to leave on an expedition, packed in a box the pictures he had made at much labor and left them in the care of a relative. When he returned after an absence of some months, he found that a rat had made its nest among his paintings and had torn them in pieces. Utterly discouraged, he was overcome for several days. When he had somewhat recovered his spirit, however, he took his gun, notebook, and pencil and returned to the woods to collect and draw birds once more. At the end of three years his box was replenished, and he regarded the pictures as better than the earlier ones."

Bird-Lore

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Edited by WILLIAM VOGT
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BIRD-LORE'S MOTTO:
A Bird in the Bush Is Worth Two in the Hand

As this issue of BIRD-LORE is printed, the Wilson Ornithological Club is celebrating, with a jubilee meeting and outstanding scientific program, the fiftieth anniversary of its establishment. Founded December 3, 1888, it has grown in enrollment until, today, it has more than 900 members. Its journal, *The Wilson Bulletin*, has published some of the most important results of research by American students of birds.

The Club was originally a chapter of the Agassiz Association and after fourteen years became an independent body. Its first official organ, *The Curlew*, was founded in 1888; after several changes of name, the present one was adopted in 1894. The first regular meeting of the Club was held at Chicago, in 1914, and since that year meetings have taken place annually, with one exception. Through the years these meetings, in which the Wilson Club often associates itself with the American Association for the Advancement of Science, have come to have increasing importance; they now attract, from many parts of the country, outstanding ornithologists to report and discuss their scientific accomplishments. The programs of the meetings compare very favorably with any ornithological programs in this country or abroad.

It would probably not be an easy matter to determine all the reasons why this Club, like many another, founded by a group of enthusiastic boys, should have survived; hundreds of such groups have drifted through puff-ball existences. An indication of the reasons for success may be detected, however, in the objectives of 1896 and those of 1938. In the earlier year the supplement to the regular publication announced that the program for the next two years had been worked out: one committee was to lead investigations of song, another of nesting, and still a third the food habits of Warblers. Still another of these ornithologists announced that he was organizing a coöperative study of the Flicker that would cover as many aspects of this bird's existence as possible.

In 1938 the Secretary of the Wilson Club attributes the large membership, distributed over most of the States although the Club is concerned primarily with the bird-life of the Middle West, "to the emphasis which the Wilson Club puts on *field studies* of birds. This organization fosters the scientific study of birds and their habits and offers a means of mutual encouragement and helpfulness to members. Special interest is taken in the study of the *living bird* and its *natural habitat*." In other words, through its publications, its personnel, and its committees, the Wilson Club has encouraged a creative approach to bird-study and in this way has kept the interest ever fresh. From an inconsequential local bird club, happily possessing the enzyme of growth, it has become a power in world ornithology.

In conservation, no less than in scientific ornithology, progress depends on research to ascertain and correlate facts; then upon the propagation of the ideas derived from the correlations. In constantly widening ornithological horizons, in steadily helping to push back the limits of the unknown, the Wilson Ornithological Club has made many contributions to the body of learning upon which is built our conservation structure. Enthusiasm and good will are not enough; they require a substantial cortex of gray matter.

As the Wilson Club enters upon its second half-century of existence it is our pleasure to wish it such success and accomplishment as it has had during the past five decades. Readers of BIRD-LORE who take more than a passing interest in birds, and especially those who live in the Middle West, would do well to join the organization. They would derive more than a little pleasure from the association, increase their knowledge of (and thereby their interest in) birds, gain a deeper understanding of the biomechanisms on which conservation is based—and help to swell the ranks and influence of an entirely admirable organization.

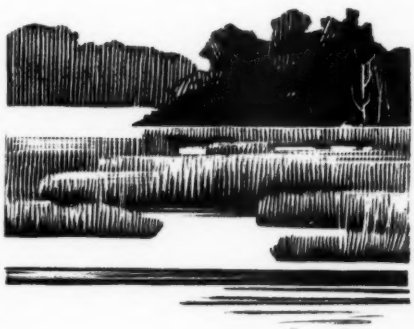
Water—Life-Blood of the Earth

By Roger T. Peterson

PART I

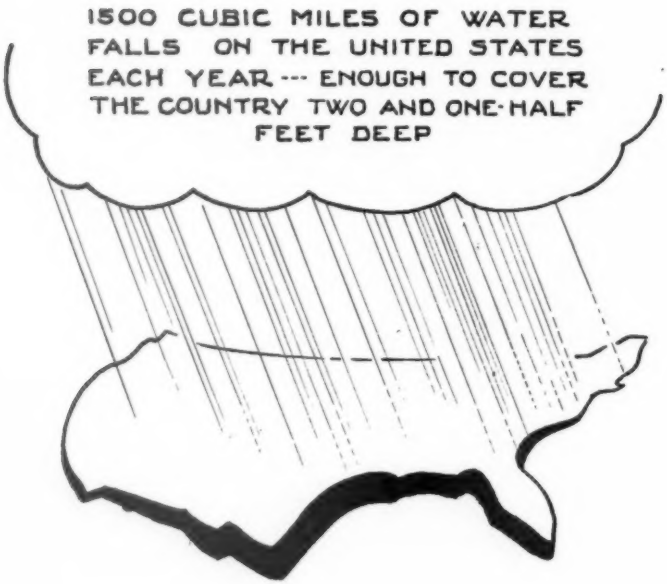
The River

The road north of town was the best one for bird walks, in the opinion of the members of the Junior Audubon Club. Any of them would have said so. Not because it was easier to reach from school—not at all. To birders, distance is not often an obstacle. The north road led to the river and to the brooks and swamps that led into the river—some of the best birding spots in the county. It was on the river that the Ducks stopped, spring and fall. It was in the lush woodlands along the brooks that the Barred Owls could be heard hooting at dusk. The best list of Warblers could be got there in May, and there the greatest numbers of birds stayed through the summer to nest. The wet places, or at least the well-watered places away from the river, were quite good, too. Dry hillsides had their birds, but not so many as the glade where the Club studied the sample of soil. (See 'The Good Earth,' BIRD-LORE, September-October, 1938, pp. 315–324.)



An Experiment

The soil is alive and birds and other animals depend on it, the class knew. Hadn't they examined a soil sample



and found it full of tiny creatures? The teacher explained that *soil alone would not sustain life without the help of water*.

As a concrete proof of this, she suggested that they try an experiment. Two large pieces of earth, each a foot square, were dug up. These were put into separate pails and put on a shelf in the clubroom. The soil in one pail was to be sprinkled frequently, and the dirt in the other left exposed to the dry air of the room. Everyone knew what the result would be. Most of them had at some time or other seen potted plants wither and die through neglect and lack of water. At any rate, it would be fun to see what would come up in the watered soil. After a time, green shoots began to appear, grass, clover, a small fern, and several larger plants. It was fascinating to see these things grow. They were in the soil, of course, but water was needed to bring them to life. The dirt in the other bucket dried out, cracked, and life died.

The soil of the world would hardly produce a thing without water. There would be no birds, nor men either.

1500 Cubic Miles of Water

Fortunately, most of America has plenty of water—sometimes a little too much in some places, but there are reasons for that, too. At any rate, it is said that 1500 cubic miles of water *fall on the United States every year*—simple mathematics would show that such an amount

could cover the country 2½ feet deep! Of course it falls over a period of twelve months, not all at once.

Where does all this water come from? One of the boys in the class suggested it came from the ocean. The geography book stated three-fifths of the earth's surface was covered by the oceans; moreover, the depth of these waters runs to 5 miles or more in some places. They are tremendous reservoirs.

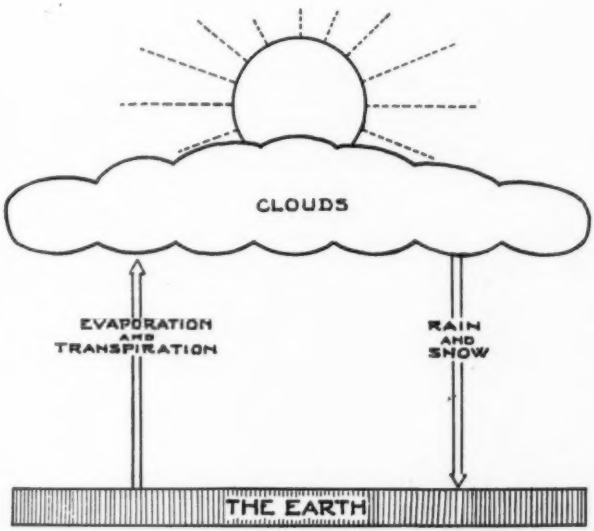
One of the girls said she thought much of the water came from the land itself—there were lakes, rivers and even puddles, which held water. Some of this standing water evaporated, made clouds, and dropped back to the earth again as rain or snow.

The teacher said that both pupils were right. The water that fell on the land came from both sources. But she went on to say that no one had mentioned another great source of water—the moisture given off by leaves and other vegetation.

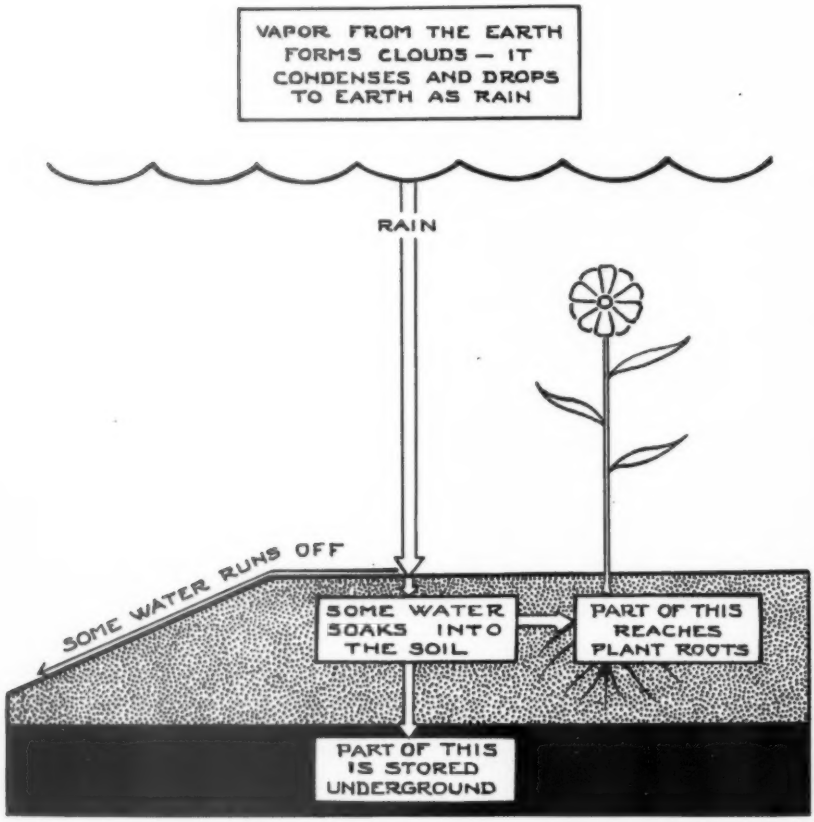
This process, she said, was called *transpiration*. Everyone knew what *evaporation* was, but transpiration was a new word to them, so one of the boys was delegated to look it up in the dictionary. There he found that it was the *sending off of vapor as through a porous substance or the tissues of plants*.

The Water Cycle

The teacher then drew a diagram on the blackboard to show her idea of the water cycle or the *hydrologic cycle*.



THE WATER CYCLE


VAPOR FROM THE EARTH FORMS CLOUDS — IT CONDENSES AND DROPS TO EARTH AS RAIN
RAIN
SOME WATER RUNS OFF
SOME WATER SOAKS INTO THE SOIL
PART OF THIS REACHES PLANT ROOTS
PART OF THIS IS STORED UNDERGROUND

Summing it up briefly:

1. The water leaves the earth by evaporation and transpiration.
2. The vapor forms clouds.
3. The vapor in the clouds condenses into rain, snow, or hail, and falls back to earth.

This cycle never ends. It has been going on for countless ages.

But what happens to the water when it reaches the earth? Does it immediately start back again into the sky? Some of it does, the teacher explained. Some of it evaporates from the surface of the ground soon after it has dropped. Some moisture even evaporates from the raindrops while they are still falling. But most of the water has a more complicated cycle.

1. Some of the water *runs off the surface*, trickling first into the little brooks, then into the rivers and finally into the ocean.
2. Some of the water soaks into the soil:
   (*a*) Part of this is immediately absorbed by plant roots.
   (*b*) Part soaks through or *infiltrates* into the subsoil and porous rocks where it

forms a sort of underground reservoir where the water is stored (the upper level of this is called the *water table*). This underground water finds its way eventually to plant roots or comes to the surface as bubbling springs or feeds into pools and lakes in the hollows.

It has been said that in some places out of every six raindrops, *three* evaporate immediately or are soaked up right away by plants and later transpired; *two* run off the surface and *one* is held in pools above ground or below the surface for later use.

Journey of a Raindrop

When a drop of water starts to the sea, it should not run a race; its journey should be a slow one—an obstacle race, at best. It is best that the rain be checked in its fall by the leaves and vegetation, then allowed to sink slowly into the soil, clear and clean, finding its way slowly to the underground streams and pools. If it is not picked up by a root, then it may find its way to a clear spring. The spring may bubble forth and reach a brook, and if the banks of the stream are healthy and the soil held together with a good luxuriant growth of plants, the water will remain clear and flow without cutting away the land. Perhaps the brook will meet a beaver pond. There the water will be slowed up until it finds its way through the cracks and crevices of the dam. And so the stream flows on, around the bends, down through the farming country to the big river and the ocean.

The journey of a raindrop should be a slow one. The teacher asked every child to get out a blank piece of paper and in five minutes list all the things they could think of that would hold a raindrop back on its

Photo by Soil Conservation Service

RAINDROPS—Their journey to the sea should be a slow one

Photo by Soil Conservation Service

If the banks of the stream are healthy, the water will flow without cutting away the land

Photo by Soil Conservation Service

Perhaps the brook will meet a beaver pond

journey to the ocean. Here are some of the things that were listed:

Soil
Leaves
Grass
Stones
Pebbles
Rotting logs
Roots
Beaver ponds
Plants along the stream
Bends in the river
Swamps
Lakes

The more slowly the water travels the more good it does along the way, the more it is used by plants and animals before it is returned to the atmosphere. This balance between absorption (sinking in) and 'run-off' was developed by nature through millions of years, the teacher said.

Journey of a Raindrop—Twentieth Century

The early settlers in the East found crystal-clear streams, luxuriant forests, lush marshes, and healthy grasslands. Wild life was everywhere abundant. In the South and many other parts of the country, the same streams which now run red or brown with mud were clear enough to drink. The teacher asked why this great change had taken place. The pupils knew the answer immediately. It was due largely to *erosion* or a wearing away of the land. In their notebooks they had listed the main causes of erosion when they were studying soil. Nearly everyone in the class had these main causes at the tip of his tongue, so there was no need of referring to the notebooks. These causes were:

1. Careless lumbering
2. Fire
3. Overgrazing of livestock
4. Improper plowing
5. One-crop farming

The class reviewed briefly these various causes of erosion.

1. The cutting of forests off the slopes left the soil unprotected so that the rain easily washed it from the rocks.

2. Fires killed the life in the topsoil, burned the sponge-like humus, and made it easy for the soil particles to wash away during the rains.

3. Too many cows or sheep on an acre destroyed the ground-cover and packed the soil so that the rain could not seep through but trickled off the surface, washing the dirt with it. The paths of these grazing animals often wore into deep gullies.

4. Improper plowing, that is, plowing the rows down-hill instead of across the slopes, resulted in great erosion throughout the farming areas. The rainwater washed down through the furrows, taking the soil along to the bottom of the hill.

5. One-crop farming, which means growing the same crop year after year on the same plot of land, soon exhausted the humus from the soil so that it easily washed away. Humus in soil makes it sponge-like; gone, it is like rock-powder.

(*To be continued.*)

The Cover

The drawing of Smooth-billed Anis, used as a cover on this issue of BIRD-LORE, was generously contributed by Mr. Lloyd Rosenblum, a student at the N. Y. Academy of Design.

AUDUBON ASSOCIATION ACTIVITIES

THIRTY-FOURTH ANNUAL CONVENTION NOTABLE SUCCESS

Attendance Records Broken at Audubon Convention

The largest meetings in the history of the National Association of Audubon Societies took place in New York, October 21 to 25, and the consensus of those in attendance was that this year's Convention was better than all its predecessors. For the second time accredited delegates and guests from affiliated organizations were entertained by the Association at a luncheon in the Flying Bird Hall of the American Museum; those in attendance came from points as distant as Florida, Canada, and California.

The third reunion dinner of the Audubon Nature Camp opened the Convention with 197 former campers, and their friends, present. Many alumni of the camp—there was a liberal sprinkling of men and women from all three years—came from distant States, including Ohio, Massachusetts, Vermont, and Florida. The high point of the dinner was a series of camp movies in color, which those in attendance agreed were as fine as any they had ever seen; these included pictures of feeding snails and marine life in rock pools such as, probably, had never before been made. They were taken by Mrs. Allan D. Cruickshank.

On Saturday morning, October 22, 105 Audubon members and friends left the American Museum for a two-day field trip to Cape May, N. J., including the Witmer Stone Wildlife Sanctuary. Despite muggy weather and unfavorable winds, the combined party lists for the two days reached a total of 118 birds. One of the most interesting aspects of the excursion was a night walk through the Cape May woodlands, where numbers of Barn Owls responded to the mouse imitations of the observers and flew about their heads.

On the one-day trip to Montauk Point 85 birders noted 85 species; the fact that the number fell below last year's is attributable to unfavorable weather. For many of the participants, who had little or no experience with littoral bird-life, the occasion was a memorable one.

The first of the conservation programs was opened on Monday morning by Alden H. Hadley, Field Representative of the Audubon Association in Florida, with a summary of his activities in that State during the past three years. He emphasized that misguided drainage projects on a vast scale, exploitation of timber resources through unscientific methods of harvesting by commercial interests, unscrupulous hunting and the practice of burning the woods, have wrought "unspeakable despoliation" of the Florida forests, and constitute a serious threat to native wild life. Mr. C. Russell Mason, President of the Florida Audubon Society, followed with an account of the vigorous expansion of program and membership of the Florida Society. Two papers, concerned with the technical problems of conservation, were then read, the first on the Florida Crane, by Robert P. Allen, of the Associ-

ation's staff, and the second on the Ivory-billed Woodpecker, by James T. Tanner, who has been studying the bird on an Audubon Research Fellowship. Mr. Allen called the attention of the meeting to the fact that the very existence of the Florida Cranes is jeopardized by serious threats of destruction of the environment on which they live. Mr. Tanner brought out the fact that Ivory-bills depend for their food on large, dead trees such as are found in primeval forests. The session was brought to an end by the showing of the first of three sets of color motion pictures of familiar birds, by Miss Margaret L. Bodine, who has been strikingly successful in recording the activities of species of the garden, orchard, and wharf.

This meeting was followed by the luncheon for club delegates. Those present, and the organizations from which they came, included: Charles A. Boehrer, Bird Lovers Club of Brooklyn, N. Y.; Dr. Harold C. Bryant, Audubon Society of District of Columbia; Beecher S. Bowdish, New Jersey Audubon Society; Carl W. Buchheister, Massachusetts Audubon Society; Bayard H. Christy, Audubon Society of Sewickley Valley, Pa.; Mrs. F. G. Dunham, Ridgewood Audubon Society, N. J.; Prof. J. R. Dymond, Federation of Ontario Naturalists; Mrs. Everett S. Griscom, Wissahickon Bird Club and Wyncote Bird Club, Pa.; Mrs. J. C. Hambleton, Columbus Audubon Society, Ohio; Mrs. John D. Kernan, Rockland County Conservation Association; C. Russell Mason, Florida Audubon Society; Mrs. Ralph M. Munroe, Coconut Grove Audubon Society, Fla.; Dr. J. J. Murray, Virginia Society of Ornithology; Mrs. J. Connor Oliver, Atlanta Bird Club, Ga.; Mrs. Hermann G. Place, Millbrook Garden Club, N. Y.; Miss Amanda M. Reed, Sassafras Bird Club, N. Y.; Mrs. Alfred Roelker, Bedford Garden Club, N. Y.; Miss Grace I. Schneider, Burroughs-Audubon Nature Club, N. Y.; Mrs. Blanche S. Sourbier, Westfield Bird Club, N. J.; Joseph Wade, Washington, D. C. Audubon Society; Mrs. F. P. Walther, Montclair Bird Club, N. J.; Mrs. H. E. Walter, Audubon Society of Rhode Island; Miss Selma Werner, Audubon Society of the Pacific; Dr. and Mrs. Frank Warner, Columbus Audubon Society, Ohio; Mrs. H. C. York, Bird Group, Elmira Garden Club, N. Y.; John H. Baker, Miss Patricia Hahn, Dr. Robert Cushman Murphy, and Douglas C. Orbison, of the National Association of Audubon Societies. Several delegates discussed, in an interesting and helpful manner, problems confronting affiliated groups, such as membership and conservation.

The afternoon session opened with a discussion by Miss Patricia M. Hahn, Educational Adviser of the Audubon Association, of the Audubon Association's educational program. Then Bayard H. Christy discussed 'Audubon the Artist,' and illustrated his talk with lantern slides of Audubon plates. This lecture is to be available in mimeographed form, along with the lantern slides, at the nominal price of $5.00, plus transportation charges, for members desiring to address their clubs. Mr. A. A. Nichol, now of the U. S. National Park Service, but until recently the holder of an Audubon Research Fellowship, gave a final report on his researches into the life history of the desert bighorn sheep. Mr. Ralph T. King, of the Roosevelt Wildlife Experiment Station, followed with a discussion of the subject: 'Is It Wise Policy to Introduce Exotic Game Birds?' Dr. King pointed out that past experience has often proved introduced foreign species to be more of a pest than an asset, and strongly urged conservationists to combat the efforts of enthusiasts who agitate for the introduction of exotic species of game and other birds without fully understanding possible biological consequences. Mr. Alexander Sprunt, Jr., Supervisor of Southern Sanctuaries for the Audubon Association, terminated the session with a talk on 'The Survival Problem of the Roseate Spoonbill.' The audience then journeyed across Central Park to the new home of the Association, where a tea and housewarming were held.

On the morning of October 25 the annual business meeting was held at the American Museum of Natural History, and the following were elected directors of the Association: Prof. J. R. Dymond, of the Federation of Ontario Naturalists, and Laurence B. Fletcher, of Boston and Cohasset, director of the Massachusetts Audubon Society. Mr. Dean Sage, Jr., whose nomination was announced in BIRD-LORE (July–August, 1938), had requested that, because of personal

affairs, he be permitted to withdraw his name at this time; he placed Mr. Fletcher's name in nomination by a petition, in accordance with provisions made in the By-laws. Messrs. Murphy, Anthony, Leopold, and Roosevelt were reëlected.

Also elected was the Advisory Board, as nominated by the Nominating Committee. Their names are given in full in the July–August, 1938 BIRD-LORE.

At the conclusion of regular business, Messrs. Allen, Peterson, Cruickshank, Pough, Pettit, Buchheister, Sprunt, Callaghan and Orbison, and Miss Margaret Brooks, reported on their Audubon activities since joining the staff of the Association.

The afternoon session opened with a survey of Canadian conservation problems by Prof. J. R. Dymond of the Royal Ontario Museum of Zoölogy. Professor Dymond quoted the prophecy that "Douglas fir will be out of the picture in 15 years and white pine, in 30. Many of the pulp and paper men admit today," he added, "that ten years hence they will be definitely worried about their sources of wood supply." Because the destruction of natural resources and conditions has not proceeded as far in Canada as in the United States, he pointed out, conservation there is not as well organized, with the result that depredations go on apace. Dr. T. Gilbert Pearson, President Emeritus of the National Association of Audubon Societies, told of 'Progress of International Bird Protective Work.' Mr. Clifford C. Presnall of the National Park Service spoke on 'The National Park Service Wild-life Program of Wilderness Protection,' and Mr. James A. Foote of the National Parks Association discussed 'The National Primeval Park and Commercial Exploitation.' He urged uncompromising effort to keep national parks free from industrial use, to obviate the possibility of further chiseling and whittling. Even when commercial invasion may not disturb the area's scenic beauty, vigilance should not be relaxed, he said, for fear of weakening standards of control. A warning that more assaults on the integrity of primeval parks will be coming up in the next session of Congress was sounded by Mr. Foote. He cited the loss of Glacier Bay National Monument to mining, and Rocky Mountain National Park to power and irrigation interests, as an example of what may happen if commercial interests are permitted to influence legislation. Dr. Ira N. Gabrielson, Chief of the U. S. Biological Survey, closed the formal meetings with an address, 'Wild-life Management as Practiced by the Biological Survey,' and gave special attention to control problems, both on the public lands of the West and on water-fowl refuges.

The climax came when some 370 members and friends of the Association congregated to attend the Annual Dinner at the Hotel Roosevelt, on the evening of Tuesday, October 25. The features of the dinner were an address (printed in this issue) by Dr. Robert Cushman Murphy, President of the Association, and colored motion pictures of some of the most striking birds of the southern Audubon sanctuaries. These were taken by Dr. W. E. Wrather, of Dallas, Texas, and John H. Storer, of Waltham, Mass.

PRESIDENTIAL ADDRESS

Remarks of Dr. Murphy, at the Annual Dinner, October 25, 1938

The National Association of Audubon Societies is rapidly approaching the half-century mark. The year just ended has been for many reasons a notable one in our history. Among these may be mentioned the continuation of research projects concerning several North American animals threatened with extinction; the successful completion of a third summer period at the Audubon Nature Camp in Muscongus Bay, Maine, an undertaking that is now practically self-supporting; the acquisition of a home of our own on Fifth Avenue, New York, which is likely to serve as headquarters for many years; and a satisfactory growth in the membership and educational activities of the Association, particularly in such peripheral parts of the continent as Florida, the Pacific Coast, and Canada. The hospitable coöperation of our neighbors in

the Dominion has in one way exceeded anything within our experience at home, for Audubon work in the public schools has there received Government sanction in addition to unofficial welcome from educators. Incidentally, we have been delighted to welcome into our Board of Directors today its first Canadian member, Professor Dymond, of Toronto.

It goes without saying that in the field of conservation there are always more needs than those to which this or any other Association can give adequate attention. We endeavor to work where the efforts promise to be most important and most effective and, above all, we constantly seek the collaboration of kindred groups. Conservation campaigns must necessarily go forward on a broad front, because in the last analysis true conservation means the closest possible approach to the maintenance of balanced nature on a continental scale. One of the troubles in the past is that there has been too much narrow and special pleading. We stand ready, however, to work with any group toward a worthy end, provided that the end does not involve the sacrifice of some other that is equally important.

We have with us here at this table tonight representatives of a number of organizations with which the National Association of Audubon Societies is proud to be associated in its drive toward the realization of the goal we all desire. I am going to ask each of these ladies and gentlemen to rise so that you may know the identity of both the individual and the group he represents.

Prof. J. R. Dymond, Federation of Ontario Naturalists.

Dr. Ira N. Gabrielson, Chief of the U. S. Biological Survey.

Dr. Gilbert Grosvenor, President of the National Geographic Society.

Senator Frederic C. Walcott, President of the American Wildlife Institute.

Mr. Redmond Cross, President of the New York Zoölogical Society.

Mr. Dean Sage, Jr., Secretary of the Boone & Crockett Club.

Mr. Arno B. Cammerer, Director of the National Park Service.

Mrs. Andrew Murray Williams, Conservation Chairman, Garden Club of America.

Mr. John H. Baker, Executive Director of the National Association of Audubon Societies.

Dr. T. Gilbert Pearson, President Emeritus, National Association of Audubon Societies.

Mr. John H. Storer, Massachusetts, whose colored motion pictures are to be shown at this dinner.

Now if I were to be asked what are the outstanding needs of the National Association of Audubon Societies, I should reply that your presence here is the answer to the first and greatest. It is extremely satisfactory to see at our annual dinners, for which we have to provide larger quarters each successive year, so many leaders in all walks of life who wish to indicate their interest and faith in the conservation movement by being with us. Another need, of course, is the perennial one that we require more and more funds as our undertakings expand. We know that these hard times have been times of economy and retrenchment, and we have done our best to fit into the patterns. But, unhappily, the dangers to wild life do not wait upon human prosperity. If we are to save the shrinking range of the Florida Crane, foster more successful reproduction of Roseate Spoonbills or Reddish Egrets, rescue the timber in which the Ivory-bills nest, prevent the extermination of the desert bighorn sheep, educate people not to kill off the last of certain predatory animals and not to continue draining the marshes until they have been converted into something far less useful and beautiful than what they were originally, the campaigns must be pushed unceasingly, even though the Damoclean sword of a deficit hangs always over our heads.

That we need a larger endowment goes without saying. We need more money for the salaries of our zealous and especially qualified staff workers. There is a tradition that we naturalists and conservationists are by definition very happy and fortunate people, and that we don't require the luxury of much money. I would even admit that there is an element of truth in this assumption. But there is surely a minimum below which the scale may not fall, and the National Association of Audubon Societies should at least be in the position of being able to draw its force from the best of training schools, and it should then be able to hold its men and women as they

mature, and offer them and their families the prospect of a secure and progressive life according to reasonable standards within the educational field.

I want to impress upon you the high quality and effectiveness of the corps which under Mr. Baker's direction makes your Society a going concern. They are all remarkably well-informed, hard-working individuals, who have developed their respective fields to such a point that their counsel and opinion are valued by their colleagues in all parts of the country.

In closing, I want to make a few remarks about a subject which is of very great interest and importance to every thinking citizen in the United States, namely the question of Duck-shooting:

The Association's Duck Policy

The National Association of Audubon Societies has at no time in its history taken a stand against the shooting of game as a legitimate recreation. On many occasions, however, the Association has called for complete protection of particular game-birds or other animals, when evidence indicated that annual and cumulative depletion endangered the maintenance, or prevented the recovery, of normal populations. To give wild life, rather than gunners, the benefit of every doubt, has been the consistent purpose of the Association, and one in which it has enjoyed wholehearted support from many leading sportsmen.

As regards the vast reduction of migratory Ducks and Geese in the United States since the advent of modern firearms, no other evidence is needed than the progressive trend in the direction of reduced shooting privileges. When, in 1935, the numbers of birds had abruptly descended to a low point universally admitted to be alarming, the National Association urged upon the Federal Government a one-year cessation of water-fowl shooting. The same course was advocated in 1936 and 1937. This objective was not attained, but beyond doubt our efforts had much to do with the drastic shortening of the open season during the most critical period in North American water-fowl history, as well as with the banning of certain shooting methods that had developed into abuses.

In August, 1938, the Federal Government, acting upon reports of the Biological Survey's field staff and of other reliable observers both in the United States and Canada, announced a new extension of the open season for water-fowl from the minimum period of 30 days to one of 45 days. This, of course, was the result of indubitable improvement over the conditions of several preceding years.

The Board of Directors of the National Association of Audubon Societies would have much preferred to see the limited privileges of 1937 stand for a longer period, at least until it had been demonstrated that the increase of Ducks and Geese represented a continuing upswing in the populations. The numbers of these migratory birds today represent only a small fraction of those that the continent supported even as recently as fifteen years ago. It is of little use arguing whether shooting is the only factor which can be immediately controlled. Since the number of gunners tends constantly to increase in ratio with a growing population, it would seem the part of wisdom to cling for a longer period to a régime drastic enough to permit a rapid strengthening of the annual increment of birds.

The Association has not seen fit, however, to attack the Chief of the Biological Survey because of the step taken. The good faith of Dr. Gabrielson and the Bureau under his direction is not to be questioned. There has been no legal relaxation with reference to baiting or live decoys. Other changes (aside from that affecting length of season) are designed to make both observance and enforcement of the shooting regulations more feasible; if these aims are not realized, the regulations should revert to their earlier status.

Even now, if we were to consider Duck-shooting as a purely biological problem, the Association would still favor one or more completely closed seasons. But every fair-minded person admits that the question is by no means so simple and, in view of optimistic reports from sources in which we have confidence, a continued insistence upon our stand of the past three years would be impractical.

It is worth a great deal to the cause of conservation to have the direct correlation

between game-supply and shooting privilege unmistakably publicized by the new regulations. The open season has now been lengthened because of authoritative reports of more birds. By the same token, the obligation of the Federal Government to reduce or cancel water-fowl shooting at the first sign of less favorable conditions, is evident. The principle of a flexible, rather than a fixed, season is highly important and, in view of recent events, one that must always be recognized.

The Directors of the National Association will continue to keep a close watch on the water-fowl situation, and will bend every effort toward forestalling the restoration of privileges that have proved far too lavish under modern shooting conditions.

Treasurer's Report

Remarks of Mr. Emerson at the Annual Business Meeting

In spite of some difficult conditions, the Association ended its year remarkably close to a balanced budget. The budgeted expenses were $188,791. At the end of the fiscal year there was an operating deficit of $7,156. A generous contribution of $5,000 received in September reduced this to something over $2,000.

I should like to say at this point that I believe firmly in the advisability and even necessity of operating the Association on a budget basis. However, I believe that a budget should be regarded as an aid not only to economy but also to effective operation. In an organization of this kind, where income is always more or less unpredictable because of fluctuation in income from investments in memberships and in gifts, effective work would be greatly reduced if we were to make up our budget with the primary purpose of coming out with a surplus. Our main job, as I see it, must always be to do the maximum of work in accordance with the purposes of the Association. I should like to pay tribute, as Treasurer, to the skill with which this matter has been handled by the Executive Director during the past few years.

It may be well to call attention to the mortgage problem of the Association. Our total investment in mortgages and real estate approximates $900,000 or about three-fifths of our total endowment fund. We have had a mounting volume of properties that had to be taken over and there is an increasing amount of accumulated unpaid interest. Under the careful eye of our former counsel, Mr. Samuel Carter, a remarkably fine job has been done for a long period of years in supervising this operation, and our present counsel, Mr. Herbert P. Carter, has taken over this work with skill and enthusiasm. The actual detailed management of properties has been carried on by our own Assistant Treasurer. It will be noticed, however, that in our system of management there is no professional real estate supervision. Under our present plan of operation I suggest that we are not giving the attention we should to getting rid of the properties we take over and cannot rent, and we are not in a position to take prompt action in operating or disposing of properties on which payments are in arrears. Perhaps the Board has been too lenient with mortgagees. In the past, consideration has been given to hiring expert mortgage advice in the same way we have hired expert advice on the investment of our securities. The Board may care to take this matter up during the coming year for further consideration.

During the past year we have purchased a building at 1006 Fifth Avenue, out of funds contributed for that purpose. It is my belief that the purchase was made on a favorable basis from an investment standpoint. That section of Fifth Avenue is likely to maintain its standard of value for many years to come, if not permanently.

In surveying the finances of the Association for the year the chief thought left with me has to do with the future. I feel very strongly that we are not expanding our services to the extent that we should. There is much that cries out to be done not only in the field of bird protection, but in the field of mammal protection and general conservation, and of course we cannot extend our operations without additional funds. How can these funds be obtained?

In my opinion the Association faces a crisis in its career in this respect. Either we will go along as a good organization, doing a good job along somewhat restricted lines, or we will determine to go forward and enlarge our activities and increase our vitality and usefulness. I suggest that organizations of our sort rarely stand still. They either go forward or actually go backward.

The accomplishment during the past few years has, in my opinion, been little short of remarkable from the standpoint of increasing the efficiency and vitality of the organization. This is not to criticize anybody, because reorganization is a phase in the cycle of organization work that must come up every few years. We have passed through such a necessary process and have laid the groundwork and public standing to justify our going forward.

However, I believe this can never be done until we provide some method of releasing the Executive Director from some of his more routine duties, or supplementing him with a man skilled in public relations work. When it comes to laying out a policy for appealing to the public and increasing our funds, both through endowment and increased membership, the phrase is always applicable that what is everybody's business is nobody's business. Work of this kind must be carefully planned.

I would propose, therefore, that the membership give earnest thought to this matter during the coming year. My own feeling is that the critical need of the problem calls for an investment, even if it must be taken out of capital, for a thorough study of the conservation field and the place which should be occupied in that field by the Audubon organization, this study to be followed by a definite plan, to cover a period of several years, for increasing along sound lines our scope of operations and our income. Naturally, if a friend of the Association could be induced to finance this project it would, I believe, be of vital permanent value to conservation in America.

But without waiting for the development of the larger scheme for the promotion of our activities and the increase of our income, to which I have referred above, all the friends of the Association should immediately consider it as part of their year's opportunity for service to work among their own friends for increased endowment, and to increase our absurdly low national contributing membership.

Housewarming at 1006 Fifth Avenue

On Monday, October 24, 1938, the housewarming was held at the new home of the Association at 1006 Fifth Avenue, New York City, and was attended by many members and friends of the Association. The entire building, consisting of six floors and basement, was thrown open to inspection, including the three exhibit rooms on the first and second floors, in which the officers of the Association received the guests. Tea was served in the Directors' room and those who honored the Association by consenting to pour tea on this occasion were: Mrs. Millicent Todd Bingham, Mrs. John W. Donaldson, Mrs. Frederick W. Ecker, Mrs. R. Parker Kuhn, Mrs. John C. Phillips, Mrs. Carll Tucker, and Mrs. Robert C. Wright.

The decorations were supervised by Mrs. Robert C. Murphy, Mrs. Guy Emerson, and Mrs. John H. Baker, and a committee of young ladies, including the Misses Barbara Baker, Eleanor Herrick, Barbara Mundy, Mary D. Pell, Mrs. Devin A. Garrity, Mrs. Thomas H. Hildt, Jr., Mrs. Roger Tory Peterson, and Mrs. Richard H. Pough assisted by conducting visitors through the building.

The New York Historical Society very kindly lent two original water colors by John James Audubon, and the walls were hung with numerous original paintings by Roger Tory Peterson, Francis L. Jaques, and Major Allan Brooks.

The staff of the Association is now comfortably housed in suitable quarters, and this may confidently be expected to result in enthusiastic furtherance of the Association's work and gives great boost to the spirit of the entire organization.

The exceptional library of ornithological books is now nearly completely installed

and is available for the active use of members and friends. All persons interested in appreciation of nature and conservation of wild life are very cordially invited to visit the new home of the Association when in New York City. It is conveniently located on Fifth Avenue, between 81st and 82d Streets.—J. H. B.

THE SANCTUARY FRONT

Great White Heron Refuge Established; Texas Islands Leased; Other Sanctuary News

Since early 1935 the Association has given special attention to the welfare of the Great White Heron, the largest and the rarest of the Herons of North America. The improving fortunes of this bird have been frequently reported in BIRD-LORE. Thus it is with particular pleasure that we announce in these same pages the establishment of the Great White Heron Refuge by Executive Order signed by President Roosevelt on October 27 last. The refuge includes the permanent range of the bulk of the Great White Heron population, as indicated by the count made in January, 1938, which resulted in a total of 373 Great Whites in the area that is now a Federal reservation. This figure is about 63 per cent of the total population as counted at that time.

There has been of late a much-needed emphasis on the necessity for preserving not only birds but their habitats as well. As our human population continues to grow, additional wilderness areas are penetrated with roads and boat channels, and the silence of savannas, swamps and forests is blasted by a confusion of civilized sounds. Original inhabitants, like the Florida Crane, the Glossy Ibis, and the Great White Heron, find such conditions pretty hard sledding. If these spectacular birds are to stay with us, we must set aside suitable environment of sufficient size to insure their permanent survival. This is an outstanding point in the establishment of the Great White Heron Refuge, and no other step could be of greater importance in providing for the lasting security of this fine bird.

The Association owes a debt of gratitude to many individuals and groups who in one way or another have made this refuge possible. To all of these, and especially to the U. S. Biological Survey and the National Park Service, we wish to express our appreciation. It will be recalled that our concern for the Great White Heron took active form late in 1934, when, following the warnings of Ernest G. Holt, we asked a member of the Association on a trip to the Florida Keys to make some inquiries regarding the status of the Great White. This initial report, submitted in December, 1934, by N. J. McDonald, revealed quite clearly that the Great White had seriously decreased in numbers and was very much on the down grade. Mr. McDonald wrote:

> Everyone I talked to confirmed that the birds are remarkably good eating, and I understand that the old birds are sought for food, as well as the young. Conditions are terrible on these lower keys, a lot of relief work being done, and such a supply of delectable meat must suffer. . . . Protection should be given this bird.

A survey of the entire range of the Great White Heron—the first of nine counts to date—was made with the coöperation of the Coast Guard Air Service in February, 1935, by Alexander Sprunt, Jr. The total population at that time was reported by Mr. Sprunt as 211 individuals. Warden service was begun immediately, but disaster occurred in the form of a hurricane, which swept the keys on Labor Day of that same year. The Great White emerged from this catastrophe with its numbers reduced to less than 150 birds.

As our efforts at rehabilitation went on, it became evident that more authority would be needed in order to deal successfully with those who still invaded the nesting keys to take the birds for food. In February, 1936, we drew up the suggested boundaries of a proposed refuge for the Great White Heron, comprising the outlying keys from East Bahia Honda southwestward to the Bay

Keys north of Key West. After correspondence with the General Land Office in Washington concerning the ownership of the keys proposed for inclusion, we made detailed recommendations on April 9 to the Biological Survey, for the establishment of the area as a Federal Refuge. The present refuge includes essentially the original area proposed, plus the Key West Bird Reservation, lying to the west of Key West, which was initially established by Executive Order of President Theodore Roosevelt in 1908, and in which there has been in recent years approximately 20 per cent of the Great White Heron population.

One of those who expressed a personal interest in the Great White Heron was President Franklin D. Roosevelt. Under date of December 31, 1937, Mr. Roosevelt wrote Mr. John H. Baker as follows:

THE WHITE HOUSE
WASHINGTON

MR. JOHN H. BAKER,
Executive Director,
National Association of Audubon Societies,
1775 Broadway, New York, N. Y.

My dear Mr. Baker: I have received your letter of December 8, explaining the urgency of the great white heron situation in Florida Bay.

Apparently, under the terms of the Antiquities Act the urgency cannot be met by proclamation and, since we have no assurance that the proposed amendment to that Act can be consummated in time to serve this particular purpose, I believe special legislation is required.

I am prepared, therefore, to approve an Act of Congress extending the Fort Jefferson National Monument for the specific purpose of facilitating adequate, permanent protection of the great white herons and other wildlife of that environment.

Work of the National Association of Audubon Societies in the wildlife protection field is one of the worthy conservation enterprises in which I am personally interested.

Very sincerely yours,
(signed) FRANKLIN D. ROOSEVELT

The decision to create a Federal Bird Refuge rather than seek the extension of the Fort Jefferson National Monument was a matter of expediency, and was accomplished through the splendid coöperation of the National Park Service, which withdrew in favor of the Biological Survey in order that patrol of the area might be initiated at the earliest possible date.

With the signing of the Executive Order last October, the Biological Survey immediately sent a patrol boat and a warden down the coast to take charge. This warden is Fred W. Schultz, who has been in the past an employee of the Florida Audubon Society and this Association. In his patrol of the new refuge, and in his contacts with the public in that part of the country, Mr. Schultz will have the full coöperation of Audubon Wardens Moore at Key West and Lowe in Florida Bay. While the establishment of the refuge in the Lower Keys relieves the Association of direct responsibility for

the Great White Heron in that portion of its range, we must continue to guard the nesting keys to the north in Florida Bay.

.8 Great Whites Per Mile!

The most recent count of Great White Herons was made by Alexander Sprunt, Jr., and Warden Edward M. Moore, on September 29 and October 4, flying with Commander C. C. von Paulsen of the Coast Guard Air Station at Miami. There was no attempt to cover the entire range by the usual series of zig-zag courses, since the birds are not concentrated on their nesting keys at that season. However, a 1–2–3 count was made over a total distance of 410 miles, and 328 Great White Herons were the result. The course flown was across the upper keys to the west of the new Overseas Highway route as far as Bahia Honda Keys, and then directly to Key West, over Spanish, Torch and Ramrod Keys. The area from Key West to the Marquesas Keys was also covered, and the return flight skirted the northern rim of the lower key group as far as the Spanish Keys. Thus what may be termed the central portion of both the upper and lower keys was not observed, and in view of this the large number of Great Whites seen is most encouraging.

Mr. Sprunt reports that the birds were greatly scattered, and during that same week individuals were noted as far north as the Tamiami Trail, on the mainland of the peninsula. Apparently there is a slight northward movement of this species in the autumn. This was the first occasion on which Mr. Sprunt saw Great White Herons from the Tamiami Trail, and may well be a sign of the return of these magnificent Herons to a more normal existence.

Progress in Key West

The establishment of a Federal Refuge in the Key West vicinity will not change for the present our work being carried on there by Warden Edward M. Moore. Since last February Mr. Moore has been located in Key West, and has been concentrating on educational efforts in addition to maintaining a highway patrol. We believe that he has succeeded in arousing widespread genuine interest in wild-life conservation among a large percentage of the Key West population. His sincerity and straightforwardness have won him many friends, and he has had the finest sort of coöperation from all local groups and authorities.

In the past there has been in that area little awareness of State and Federal laws for the protection of wild life. Warden Moore has sought, through the educational means at his disposal, and by personal contact, to create recognition on the part of the Key West people of the multiple values to them of the preservation of the wild life and observance of the protective laws. A column in the local newspapers has been placed at his disposal for weekly articles on wild life and wild-life problems of the region. He also gives illustrated lectures to school and church groups, and to adult clubs and informal gatherings of adults and children alike. On one occasion the local motion picture theatre exhibited a series of wild-life films supplied by the New York office, admitting the public free and making no charge to the Association for use of the theatre, projection equipment, or personnel. This event was advertised in the *Key West Citizen* through the courtesy of that newspaper, and was well attended.

Naturally a 100 per cent response cannot be looked for, and Warden Moore found it necessary on one occasion last summer to arrest a Key West resident who had just shot a Ward's Heron. The case came before Judge Albury in September. There was a good deal of interest in the situation, and the conviction that was handed down sets an important precedent. Warden Moore requested that the defendant be given a light sentence, and, as a result, sentence was suspended, although the man's weapon, a brand new shotgun, was confiscated by the Court. The effect of this incident has been such that further cases of this nature will, we hope, not prove necessary. Most residents of the Key West area are learning to appreciate that the unusual bird life of their region is of more value to them alive than dead, and a general acceptance of this sentiment is the principal object of Warden Moore's current efforts.

Varia et Mutabilis Semper Ajaia

In the month of October, when the first frosts are reported in the northern states, and those creatures of the limelight, the Ducks

and Geese, are moving southward in greater or in lesser numbers than last year, the Roseate Spoonbills of Florida Bay consider it the proper time to begin their annual period of courtship and nest-building. In this respect they differ not only from most other birds on the continent, but from all other Spoonbills that we are personally acquainted with. In other parts of Florida such Spoonbills as have nested in recent years follow a much more conservative pattern and nest in late March or April. In Louisiana and Texas the Spoonbills bow to the example set by other wading birds, and wait until May and June before building their bulky but well-constructed nests.

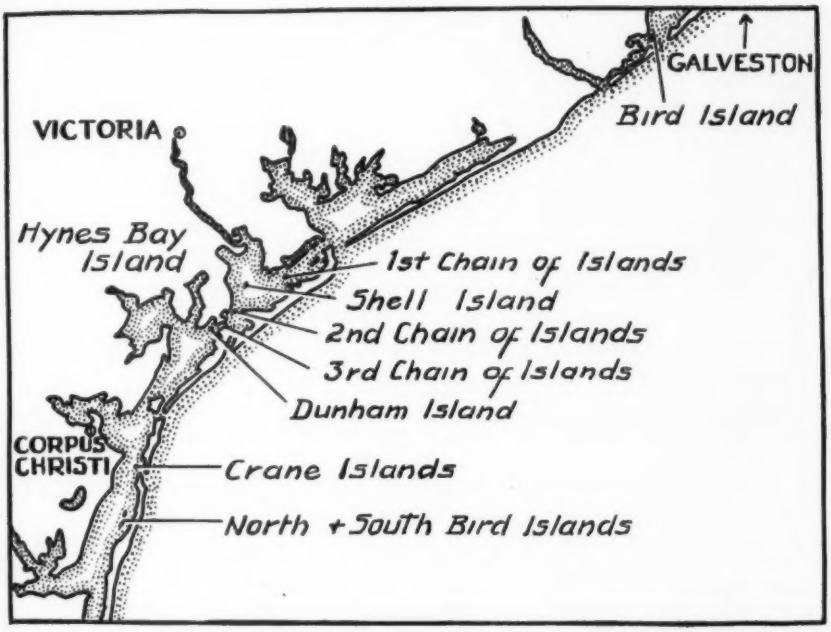
When Mr. Sprunt flew over the Florida Bay nesting-site in September, there was not a single Spoonbill in evidence. Nevertheless he instructed Warden Lowe to prepare for the expected arrival of the birds the following month. Our current program calls for the presence of the warden day and night in the immediate vicinity of the Spoonbill colonies, and this meant the acquisition of a boat or lighter on which the warden could live. Thanks to the great interest and generosity of Judge E. R. Lowe of Tavernier, father of Warden Lowe, a well-equipped houseboat has been purchased and placed entirely at the Association's disposal. When these preparations had been completed—including a check-up of the patrol boat, provisioning of the lighter, arrangements for the services of an assistant to carry provisions and messages and a great many other details—everything appeared to be in perfect order, except the Spoonbills themselves! After a brief period of disturbing doubt and nail-biting, the first group of these mysterious and unpredictable birds arrived on October 28—twenty-three in number. Warden Lowe's vigil began at once, and will remain unbroken until the last young Spoonbill of the present season has left the nesting key under its own steam.

In addition to maintaining a highway patrol to prevent the shooting of birds by gun-toting motorists, and boat patrols in Florida Bay where Great White Herons occur in several important concentrations, Warden Claude F. Lowe has been busy with other outstanding species. During the summer he began a survey of the White-crowned Pigeon, which is one of the interesting species peculiar to the keys region. Until our warden work in the keys began three years ago, these birds were regularly slaughtered for food. The squabs were taken from the nests and the adult birds shot on their flyways. While patrolling the areas inhabited by the Pigeons, Warden Lowe has been mapping their nesting and feeding locations, and the routes taken by the birds in flying from place to place. These studies will serve as a basis for more efficient patrol work in the future.

Other Florida Items

News of outstanding interest and of the utmost importance to the Association's work in Florida, is the recent employment of J. Ray Barnes, of Bonita Springs, as a full-time warden for the west coast from Tampa Bay to Cape Sable, and in the glades and lakes at the southern tip of the peninsula as far east as Card Sound. For some years past Mr. Barnes has served as a warden for the Florida Commission of Game and Freshwater Fish, in which capacity he achieved an enviable record as an officer and conservationist. Mr. Barnes brings to the Association a unique knowledge of the southern Florida wilderness and its inhabitants, including man. He is acquainted at first hand with such regions as the Big Cypress, and is equally at home at the controls of a 'glades buggy' or an airplane. Our responsibilities in the important sector of coastline south of Cape Romano will be just one of the items in the big job that Mr. Barnes is tackling. He leaves the service of the State with the good wishes of the Commission, and it is with pleasure that we welcome him to the Audubon warden staff.

Throughout southern Florida there appears to be some reduction in highway shooting. However, the epidemic is far from under control. The Association has continued to maintain large wooden signs at strategic points along some of the principal highways, and within the last few months has added an additional number of these. We were sure that some gunners would manifest their prowess by taking pot shots at these signs, possibly from a car in motion to make it more sporting! We also expected that the local Seminoles would find the



brightly painted wood a great temptation. That we have not been disappointed is evidenced by the accompanying photograph and by the disappearance of other signs along the Tamiami Trail in the vicinity of Indian camps. Far from being worried by these losses, we are inclined to feel that the mutilation of such equipment as pictured herewith expresses with unique emphasis a certain point of view, and indicates quite clearly the necessity for pushing ahead with our program in south Florida.

Good News from Texas

Since the recent oil-boom on submerged lands of the Texas coast we have been much concerned about the future of the many important water-bird habitats of that State. For some time we have been endeavoring to determine just what steps might be taken to set up permanent refuge areas that would include the necessary environmental requirements of Spoonbills, Reddish Egrets, Glossy and White Ibises, Brown Pelicans, Cabot's Terns and the other nesting birds of that coast. The U. S. Biological Survey has already made a start on a program for the preservation of suitable areas for migrating water-fowl.

As a result of a conference between Mr. John H. Baker and the State Land Commissioner, we have now obtained from the State of Texas leases for a period of five years on nine important island groups, the locations of which are indicated on the accompanying map. The Land Commissioner of Texas has the power to lease state-owned lands for grazing purposes or for mineral development. Although these will not prevent simultaneous leases for mineral development, they do give us definite rights to post the leased islands against trespass, and to patrol them with authority. This will undoubtedly lead to community recognition of wild-life sanctuary treatment of these areas.

In these areas, together with Green Island already leased from the State of Texas on a fifty-year basis, and the Vingt'un Islands, recently established as a State Bird Sanctuary with an Audubon warden on duty, we now have the great bulk of the breeding birds of

coastal Texas within recognized sanctuaries. On the islands recently leased there are nesting colonies of Roseate Spoonbills (Second Chain-of-Islands, Hynes Bay Island, Crane Islands), Reddish Egrets (Second Chain-of-Islands, West Bay Bird Island), Oystercatchers and four species of Terns (Shell Island, Third Chain-of-Islands), Fulvous Tree-ducks (Hynes Bay Island). In addition, there are numerous other birds more abundant as species than the above, notably Herons, Egrets, and Ibises. Hynes Bay Island, for example, has large numbers of both White-faced Glossy and White Ibises.

The increased responsibility entailed by this program will require augmented warden service, and once more we must look to our members for generous financial support that will make it possible to carry these plans to fulfillment.—R. P. A.

Help!

We are at last able, through analysis of replies to the questionnaire 'Help,' to render a report to our readers on the exploration of their likes and dislikes with reference to BIRD-LORE, and into their financial and buying behavior patterns. We wish to express our appreciation of the thoughtful coöperation of more than 650 people who sent us their comments; we believe this will result in molding the magazine more nearly to the desires of our readers. No major operations are anticipated, but we now have a clearer understanding of the trend of reader taste.

It was, of course, gratifying to discover that the vast majority of readers, assuming the questionnaire gives a reliable sample, are pleased with the journal; it was even more gratifying to have them tell us of the things they did not like and to suggest means of improvement. Many helpful requests for particular types of articles were made, and so far as feasible these will be satisfied.

A few details:

Under the question, "What recent articles have you enjoyed most?" thirty-eight titles were listed. The leaders of these, in the order of their popularity, were: 'Conservation Esthetic,' by Aldo Leopold; 'The Marsh Hawk and Its Hunting,' by Paul Errington; 'Down the Santee in a Folding Boat,' by R. T. Peterson; 'Invitation to Florida,' by R. J. Longstreet; 'A Recent Oil Pollution,' by Elmer C. Aldrich; 'Two Masters of Wild-life Painting,' by Aaron Moore Bagg; 'Posterity's World,' by R. C. Murphy, which tied with 'Skimmer—Bird with the Bill,' by O. S. Pettingill, Jr.; 'The Amateur Ornithologist and His Bird Club,' by J. J. Hickey; and the 'Song Sparrow' series by Mrs. Nice. Ranking fifth, numerically, in the number of times it was given, was the answer of "all articles."

Question two, "Which articles, in your opinion, might better have been left unpublished?" elicited a list of eighteen titles but those answering this question with a succinct "None" outnumbered the nearest group of articles nearly four to one.

The question as to whether more or less bird and conservation articles are wanted, was answered overwhelmingly in favor of more of both; how both categories are to be increased without an increase in income, is a problem that remains to be solved.

The vote on more or less Audubon Association news approximately balanced the group that wanted more with the one that asked for less or the same amount. Regional articles won by a large majority, and we have already requested authors to prepare Baedekers of their regions.

The answer to the question, "Do you want more or less of the Season?" brought a response that was both gratifying and surprizing to the Editor who had not realized how extremely popular this department is. Moreover, a large proportion of those answering this question read the reports of distant regions, as well as their own. (A certain number of people answering this question, as well as others, left BIRD-LORE's staff in a somewhat confused state of mind when, to the query, "Do you want more, or less, or the same?" of this and that, they responded, "O.K." or "Yes." In our tabulations we could only assume that these individuals felt kindly toward us—and omit their answers from our calculations.)

The Christmas Censuses also won their popularity contest, and the request that they be printed and distributed as a supplement to BIRD-LORE, was overwhelming.

Book reviews, editorials, and 'Learn a Bird a Week' also won, hands down.

The questions on automobiles, income taxes, etc., were asked in order that we might tell prospective advertisers something of the character, taste, and financial status of the people they would reach by advertising in our magazine. We feel we cannot plead guilty to the charge of 'impertinence' levelled against these inquiries, by a few annoyed readers, since we specifically suggested the questionnaires be not signed. The answers showed that of those sending them in, 86 per cent own cars; 91 per cent own field glasses; 83 per cent own cameras and spend an average of $48 per year each; and 62 per cent pay income taxes. Since, in the country as a whole, only about 3 per cent pay income taxes, bird-lovers would seem to fall within a successful group, measured by economic standards.

Those who would not object to the tobacco and cigarette advertising that helps to support most of America's magazines, outnumbered the objectors three and a half to two, and those who prefer that there be no advertisements on pages with the reading matter (a viewpoint shared by no advertising agency in the country) outnumbered those who would not object to such a make-up, 281 to 280!

We recognize, of course, that the sample of reader preferences given by the questionnaire is not large enough to provide us with an infallible guide, and it is our hope that individuals will comment freely on BIRD-LORE whenever they feel the inclination. The answers outlined above are to be regarded merely as an expression comparable to a straw vote.

PHOTOGRAPHY REVIEW

By Henry Clay Gipson

(The opinions expressed herein are those of Mr. Gipson and do not necessarily represent BIRD-LORE's.)

The new 2¼ x 3¼ Speed Graphic, which has just been announced by The Folmer Graflex Corporation of Rochester, N. Y., is perhaps destined to become standard equipment for many serious natural life photographers.

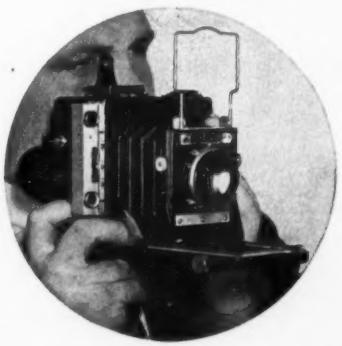
This camera is a mean between the large bulky cameras of the past and the more recent, extremely small, miniature cameras. It combines advantages of both while avoiding many of the obvious disadvantages of extremely large and small equipment.

Obviously the most important feature of the new camera is the greatly reduced size, which is 36 per cent smaller than the next larger Speed Graphic. It is 3½ inches deep, 4⅞ inches wide and 5½ inches high.

The camera incorporates all of the advantages of the larger Speed Graphics, plus a built-in photoflash synchronizer, geared to the focal-plane shutter and working on speeds of 1/60 and faster. Thus it will be possible to take flash pictures of birds at a camera speed of 1/1000 of a second. Of course, very few bird pictures are taken in the darkness, but synchronized flash at high speeds in early morning will make many pictures possible which have formerly been impossible.

Dual focusing knobs are provided to make focusing easy from either side and an

The new Speed Graphic



all-metal bed supplies rigidity and increased protection for camera mechanism and lens unit when the camera is closed.

A removable lensboard accommodates a wide variety of speed, telephoto and wide-angle lenses. With standard lens equipment an internally coupled range finder is available with a range from 4 feet to infinity.

The camera has a double-extension bellows. It has a rising and falling front and the purchaser has a choice between Graphic or Graflex type back. Both optical and folding wire range finder are provided.

These features make the new miniature Speed Graphic one of the best cameras for the ornithologist. It will doubtless be responsible for many of the outstanding bird pictures of the future.

Eastman's well-known Kodachrome film is finally becoming available in the smaller cut-film sizes. A month or so ago the larger professional sizes were placed on sale and spectacular results immediately came forth. Now, with the smaller sizes for hand cameras on the market, birds will soon be captured on film in all their natural vivid colorings. Eastman will do all the developing of this cut film. When smaller lots than the regular package of six are returned separately for developing, an additional charge of fifty cents is made.

BIRD-LORE'S THIRTY-NINTH CHRISTMAS BIRD CENSUS

BIRD-LORE'S annual bird census will be taken, as usual, on Christmas Day, or as near that date as circumstances will permit; *in no case should it be earlier than December 20, or later than the 26th. No reports received after January 2 will be printed.*

Again this year, subspecific names—as *Mississippi* Song Sparrow, *Atlantic* Song Sparrow—are to be omitted in all cases where the birds are subspecifically identified merely on the basis of the assumption that they must be the subspecies named because of the locality in which they are found. Where they are identifiable in the field, they may be included.

The rejection of censuses will again be necessary where the rules are disregarded. These have been reduced to the absolute minimum.

Censuses must be submitted in A. O. U. *Check-List* order (1931 edition); the *diameter* of the total area censused may not exceed 15 miles; censuses to be written on one side of the paper, only—and typed, double space, if possible; please follow punctuation of sample census; do not submit records in columnar form, but have one record follow another, in a single paragraph; use no ditto marks; do not use parentheses around numbers; census must last at least six hours and not extend over more than one day. Exact hours afield, and weather conditions, must be indicated. Mileages and hours, in terms of *single party* mileages and hours, must be given. That is, if four people are together three hours, in two parties three hours, and separate three hours, the total single party time is not 9 hours but 21 hours (3 plus 6 plus 12). Birds not actually recorded in the census itself are not to be included in the totals. As far as possible, a numerical value is to be given to numbers of birds seen and the words "common," "abundant," etc., to be avoided. Exotics such as the House Sparrow, Starling, Pheasant, and Hungarian Partridge are to be included on the same basis as native birds.

The ornithological value of the censuses will be increased as the work is standardized. Those participating are urged to cover the same territory, in the same amount of time, annually. The data thus acquired will be of greatly augmented comparative value to researchers using BIRD-LORE census data.

Without wishing to appear ungrateful to those contributors who have assisted in making the census so remarkably successful, lack of space compels us to ask each census taker or each party to send only *one* census.

Bird clubs taking part are requested to compile the various lists obtained by their members and send the result as one census, with a statement of the number of separate ones it embraces. It should carry the names

of all observers who have contributed to it.

Each unusual record should be accompanied by a brief statement as to the means of identification. When such record occurs in the combined list of parties that hunted separately, the names of those responsible for the record should be given. An example of a census is given below:

Madison, Wisc. (along the shore of Lake Mendota to Picnic Point, then across the fields and woods to Middleton, returning by automobile).—Dec. 26; 7 A.M. to 4 P.M. Clear; 6 in. snow; wind light southwest; temp. 16° at start, 26° at return. Observers in groups as follows: party I, 2 observers, 3 hours, 3½ miles; party II, 1 observer, 1 hour, 1 mile; party III, 5 observers, 1 hour, 1½ miles; party IV, 4 observers, 3 hours, 3 miles; party V, 6 observers (all), 2 hours, 2 miles. Total miles afoot, 11; total hours afoot, 10. Old-squaw, 31; House Sparrow, 17; . . . Song Sparrow, 1. Total, 19 species, 333 individuals. A Screech Owl was seen from the car while returning to Madison. A flock of Robins, on the 25th.—HARRY ANDERSON, LEON J. COLE, ARTHUR HAWKINS, ALDO LEOPOLD, JOHN MAIN, A. W. SCHORGER (Kumlien Club).

As many of these records as space will permit will be published in the February issue of BIRD-LORE, and it is *particularly* requested that they be sent to the Editor (at 1006 Fifth Avenue, New York City) by the *first possible mail. It will save the Editor much clerical labor if the model here given be closely followed.*—WILLIAM VOGT.

THE MORNING AFTER

Conservationists have been asking communities installing elaborate and expensive mosquito-control systems how these systems are to be maintained after Uncle Sam buttons his pockets. One of the most cogent arguments against mosquito control is the expense of upkeep. We know of no community that has eschewed mosquito control for this reason but there is beginning to be evidence that the spending spree has—as we have repeatedly foretold—left a headache in its wake. The following editorial is from the Stone Harbor (N. J.) *Reporter*, of November 5, and the capitals and wording, "Frankenstein" and all, are the *Reporter's*.

This Isn't to be Laughed Off

Most resort municipalities which have received a plea from the Cape May County Mosquito Extermination Commission to aid in next year's control plan, both financially and by urging the county to bring the Commission's appropriation to its $13,000 quota, casually have tabled the request.

With a blunt "Refer it to committee" or "Spread it upon the minutes," the letters for aid have been laid aside—BUT IT MAY PROVE A COSTLY MISTAKE! Here are the facts:

Since 1933 (remember the CWA?) the Mosquito Commission, with Federal aid, has dug between five and seven million feet of drainage ditches, to take stagnant water out of low areas. Mosquitoes breed in stagnant water. Came the end of the CWA, and two CCC camps carried on the work, one at Tuckahoe and one at Dias Creek. Two years ago the Tuckahoe camp was abandoned. A month ago, the Dias Creek camp was withdrawn. The question is: WHO IS GOING TO MAINTAIN THESE DITCHES?

The Mosquito Commission has been able to get by with a $6500 appropriation from the county, due to the Federal aid. But it has none now, and needs its full quota of $13,000—which is all it is allowed under state law. That still isn't enough. The municipalities must aid. Even with their help, the Commission will be able to clear out only TWO MILLION FEET OF DITCHING NEXT YEAR.

Don't forget there are between three and five million feet of ditches on which no maintenance work will be done at all. Truly, it is a Frankenstein, this mosquito-control drainage problem. And Cape May County faces a worse situation than ever before, unless the Commission gets coöperation.

Todd Wildlife Sanctuary Escapes Hurricane

The hurricane that, in September, was responsible for such great damage and loss of life in New England, completely missed the Audubon Nature Camp, we are happy to report, in answer to numerous queries that have reached headquarters.

Dr. J. C. Phillips Dies

Dr. John C. Phillips, noted ornithologist and Director of the National Association of Audubon Societies, died suddenly of a heart attack in southern New Hampshire on November 14. He was sixty-two years of age. The author of numerous scientific works, including the monumental *Natural History of the Ducks*, Dr. Phillips for many years devoted a considerable portion of his time and means to conservation. He was on the board of the Massachusetts Trustees of Public Reservations, chairman of the Massachusetts Conservation Council, and chairman of the American Committee for International Wildlife Protection. Besides his work for wild life in the United States, he supported attempts to preserve the fauna and flora of Africa. Few non-professional conservationists have equaled Dr. Phillips' knowledge; indeed, in certain branches of conservation work he was so well informed that he was without a peer. Those who are working for the conservation of wild life will long miss his kindly and wise guidance.

Lecture on Audubon Available

A most interesting and charming lecture on 'Audubon the Artist,' written by Bayard H. Christy, is now available, in mimeographed form, along with a series of some 40 colored slides made direct from the elephant folios. The lecture and slides, together, may be rented for one evening's use for $5.00, plus transportation charges. This lecture was one of the outstanding addresses at the recent Audubon Convention, and many bird clubs will want to take advantage of this opportunity to learn more about the life and talent of America's first outstanding bird painter.

Audubon Calendar for Christmas

Many members will want to take advantage of an opportunity to secure, for Christmas, a copy of a new, 1939 calendar, each month with an Audubon print reproduced in full color. The calendar was originated and designed by the Dodge Publishing Co. and proved to be so well done that it has been stocked by our service department. It is 8½ by 12 inches and sells, boxed, for $1.00. The birds portrayed are: the Baltimore Oriole, Wood Duck, Magnolia Warbler, Meadowlark, Cardinal, Barn Swallow, Goldfinch, Flicker, Bobolink, Tufted Titmouse, Screech Owl, Great Blue Heron, and Anna's Hummingbird. Postage will be paid by the Association.

Field Check-Lists Ready

The Audubon field check-lists are now available and will be desired by many bird-lovers who are planning to participate in the Christmas Census. There are three sets of cards: (1) for North America east of the Mississippi; (2) from the Mississippi through the Plains; and (3) the Pacific States. In ordering, it is important to stipulate which cards are to be used. They sell for 25 cents for 10; $1.00 for 50; and $1.98 for 100.

BOOK NEWS AND REVIEWS

THE BLUE-WINGED TEAL: ITS ECOLOGY AND MANAGEMENT. By LOGAN J. BENNETT. Collegiate Press, Inc., Ames, Iowa, 1938. xiv + 144 pp. Illustrated. $1.50.

No family of American birds has impinged more strongly on the consciousness of Americans nor, probably, had a closer economic relationship than the water-fowl, yet no species of these important and interesting birds has yet been honored with an adequate life history; by adequate is meant a study of the caliber of Stoddard's on the Bob-white, Nice's on the Song Sparrow, and Hann's on the Oven-bird. A magnificent opportunity awaits some American biologist and, because of the importance of our Ducks and Geese to sport—nearly three-quarters of a million Americans hunt them—financing of the study should appeal to patrons of sport and science.

Should such a survey be undertaken, this excellent study of the Blue-winged Teal would provide an invaluable datum line. Dr. Bennett devoted a large part of four and a half years to the study of the species, and has discovered and assembled a great body of facts on which to base an intelligent conservation program. His nineteen chapters discuss, among other things, the breeding and wintering ranges; spring and fall migration; courtship, nesting, and rearing of young; nest-destruction and juvenile mortality; nesting and rearing cover; food habits; nesting populations; parasites and diseases; agriculture and drainage; and methods of estimating the yearly production.

It should be strongly emphasized that while the book will be most useful to wild-life managers and conservationists, it is absorbing reading for anyone who enjoys birds and the out-of-doors; while it is a straightforward, factual account, it is pregnant with the meaning of life itself, and there are few readers of BIRD-LORE who would not find pleasure and understanding in it.

There is not space to give the volume the discussion it deserves, and only a few high points may be mentioned.

That those who have been seeking a closed season were not baying at the moon is indicated by Dr. Bennett's statement that: "Probably not more than 25 per cent of the 1900 numbers was produced in 1935." With an enormous increase in numbers of hunters, to shoot the birds, there was a reduction—in Iowa—from 6,000,000 to 50,000 acres of breeding territory. That the increase in numbers of sportsmen may, in some degree not stated, be offset by the termination of market-gunning, is suggested by the statement that in 1900 a brace of Blue-wings sold in New York markets for 40 cents.

Sixteen per cent of the nests under observation were destroyed by mowing, and there is strong implication that a flushing-bar, advocated in many sportsmen's magazines, would not have remedied the situation since "the island of vegetation left around the nest attracted a number of curious animals to the scene . . . resulting in the destruction of the nest." The author found, contrary to the belief of some observers, that unless he exercised extreme care his visits to the nests "were very likely to attract predators." Only 4.8 per cent of the nests were destroyed by Crows, and no evidence was obtained that coyotes were nest-robbers or killers of ducklings. Skunks destroyed but 2.4 per cent of the nests, and the abundant Coot apparently served as a buffer species against minks. "Each pair of Blue-winged Teal . . . that stopped to nest in Iowa from 1932 to 1936 started south each fall with 3.09 young ducks." During this period between 5000 and 6000 ducklings were observed.

One of the most striking conclusions was that moderate grazing—one cow per 4.6 acres, in the area under study—was beneficial to nesting Ducks. More than 95 per cent of the nests were found within 220 yards of the shoreline, regardless of the size of the water area, and "it seems as though a pothole of one-half acre is near the optimum." And there is much more, equally significant, but space limits further quotations.

Like most good publications in a growing field of study, this one asks more questions than it answers. This is especially true of the sections that do not fall closely within the meaning of 'Ecology and Management.' The comments on behavior display a surprising disregard of published literature, and if Dr. Bennett's observations had been made with the findings of other biologists in mind, the book would have been eminently more satisfactory. It is difficult to understand why the papers of such outstanding students of anatadine behavior as Heinroth and Lorenz should have been completely ignored, especially since their observations and interpretations would have given meaning to a number of Dr. Bennett's observations that now have none—for example, on courtship, care of young, and territory (which word is loosely used without respect to the meaning given it by Howard, Mayr and Tinbergen). It is puzzling that not more is said of the results of banding; surely the Blue-wing has not escaped the banders' traps!

The book is poorly edited; there are numbers of typographical errors, several sentences whose meaning is not clear to the reviewer, and an incomplete index. Dr. Bennett's manuscript deserved better treatment.

Mr. Sid Horn has supplied a large number of attractive black-and-white pen drawings, and a fine colored frontispiece of the Blue-winged Teal. Altogether, this is not only one of the most important ornithological works of the year—but of several years.—W. V.

LIFE IN AN AIR CASTLE. By FRANK M. CHAPMAN. D. Appleton-Century Company, New York. 250 pp. $3.00.

Dr. Chapman has been living in his 'Air Castle' on Barro Colorado Island, Panama, since 1925. At the end of four seasons he reported in *My Tropical Air Castle*, and now, having passed twelve dry seasons on the Island, he brings his observations up to date in *Life in an Air Castle*.

Life in an Air Castle is not just a continuation of the first book, although some old friends troop through its pages. Dr. Chapman is true to his old loves, the coati, peccaries, monkeys, and Turkey Vultures, adding many observations on these animals; he solves the mystery of Juan—and he writes of new friends. The strange habits of the Smooth-billed Ani and the courtship of Gould's Manakin are first-rate contributions to the growing knowledge of bird-behavior. The reader enters into the hunt for the 'Composer' and 'Cho-Ho' with joy. 'Making of a Cayuco' offers a photographic record of this interesting activity and interprets the use of this indigenous craft with rare understanding. A chapter 'The Past and Present' gives a bit of the history of the place long before it became an island or a preserve, then gives a short account of the stewardship of the Executive Committee. Mention is made of a few of the more than three hundred publications relating to the Island and some thirty-two authors and their works are cited. A briefly annotated list of the birds of Barro Colorado Island is published as an appendix. There is a usable index. The drawings by F. L. Jaques have caught the spirit of the book most admirably.

Here is a work that will please the student of birds and mammals because of the scientific accuracy of the author's observations, it will delight the lover of Nature because of the warm, rich charm of the writer's reactions which the reader is bound to share, and it will confound the skeptic who believes that no scientist can write beautiful prose. In describing his 'castle' Dr. Chapman says: ". . . Near by a book-shelf . . . Permanent places are held by my Barro Colorado note-books, Darwin's, Bates', Wallace's and Belt's *Journals*. There is something of Thoreau, Burroughs, and Bradford Torrey. . ." The material for *Life in an Air Castle* came from the note-books on this shelf. They show the effect of such good companions, for the book that grew out of them is both natural history and literature.—ROBERT K. ENDERS.

CANOE COUNTRY. By FLORENCE PAGE JAQUES. Illustrations by FRANCIS LEE JAQUES. The University of Minnesota Press, Minneapolis, 1938. 78 pp. $2.50.

If you love the outdoors you'll enjoy this little book thoroughly, whether you've learned how to keep your balance in a canoe or not. And if you know what it is to break your back against a head wind or find the delicious loneliness of island camps that only a canoe can reach, then *Canoe Country* will bring a surge of pleasant recollections, and ambitious plans for your next vacation.

An illustration from Canoe Country

Fortunately, the author was a novice *voyageur* (the experienced Mr. J. suggested *coureuse de bois* as more correct!) and the many simple, unforgettable delights of camp-life—night sounds, a night thunderstorm, portages—are described with an enthusiasm that carries one along. The text is in diary form, which is helpful to the easy casualness of Mrs. Jaques' style. Beginning with vague plans in a New York apartment, the trip is brought closer to reality by the environmental stimulus of charts, packsacks, and other gear of the canoe-camper, dug out of a closet and scattered around the living-room. At this moment in come chance visitors, and, like Tartarin de Tarascon, the two adventurers find themselves committed.

There are thirty-eight black-and-white drawings by Mr. Jaques, whose exquisite work is equally well known in several mediums. The pictures fairly smell of pine needles and cool air from northern lakes. There are churning rapids, birch trees and Grouse, a frightened porcupine swimming among lily-pads, and camp scenes that make the four walls of an apartment seem highly unreal and unsatisfactory. The full-page illustrations are magnificent (the pages are 8 by 10½), and the chapter headings and vignettes are often amusing and always appropriate.

The Horned Lark on the fence-post (". . . early spring, with the Horned Larks on the fence-posts along the snowy roads") is a superb example of effective economy of line, which is mightily satisfying to the eye and taste. The Bald Eagle, though perhaps just a trifle exaggerated, is nevertheless one of the best in the collection. Night scenes, and a forest view, are handled with the sureness and vigor that make Mr. Jaques' art an outstanding contribution and one of the many reasons you will find lasting pleasure in this book.

The book as a whole will make you want to go to Minnesota, there can be no doubt of that, but if you can possibly arrange it, take Mr. and Mrs. Jaques with you. On a trip into the northern lakes there isn't a thing worth remarking that they will be likely to miss!—R. P. ALLEN.

THE AMERICAN BISON. By MARTIN S. GARRETSON. New York Zoölogical Society, New York. xii+254 pp. $2.50.

Varied emotions possess the reader of this tremendously interesting volume, prominent among which, during its perusal, is that of shame. One wonders how humanity could have exhibited such brutality, greed and insatiable desire to kill, seemingly for killing's sake, in the red slaughter that characterized the butchery of one of the grandest species on this continent. The treatment of the bison is an indelible stain on the record of America's treatment of wild life and though one cannot but liken it to that other blot which crystallized in the senseless and complete extermination of the Passenger Pigeon, the reader of *The American Bison* is left, after all, with a sense

of gratitude. Faith in human nature is restored by the conviction that the bison will not follow the Pigeon into oblivion. True, this was barely accomplished; it was touch and go for a while, but we still have the bison, and will have it in years to come. There are yet those in this country who will not stand by and see a species wiped out, and in this we can take courage.

It was one of those indomitable spirits who has given us *The American Bison*. Martin S. Garretson was a plainsman and is a naturalist. He saw the bison when the latter still roamed the prairies, he knew their hunters. He wanted the bison saved and he has lived to see the accomplishment of a great endeavor. His book is masterly in its presentation of one of the greatest themes of American natural history.

So packed with interest is it, so completely absorbing page by page, that one feels quite incapable of even sketching its high spots in a brief review. He begins at the very beginning, tracing the origin of the bison; he tells of its appearance, ways of life, and impressions upon early explorers. He vividly portrays its amazing numbers, migrations, natural enemies, diseases and then, the bloody picture of the deplorable butchery of herd after herd. He shows the dependence of the Indian on the bison, and how neither the one nor the other was "intended for civilization or endowed with natures that could be easily domesticated." With the going of the bison, everything essentially Indian went also.

The population of the bison in early days is set at about 60,000,000. Individual herds were seen which covered fronts of 25 miles, and were 50 miles deep. Plains were black with them, and a man could have walked for miles on their massed backs. So vividly are these word pictures drawn that one can almost feel the trembling of the earth to the hooves of the 'thundering herd.' The decline from these well-nigh incredible numbers was almost meteoric. It took the white man to destroy an asset which the Indian had never depleted. Even in the height of the slaughter there were those who felt some alarm at its ferocity, and viewed the headlong pace toward extinction with concern. As early as 1875 the Texas Legislature drew up a bill for its protection, but it was blocked by one man, a man well thought of in the war records of the United States, but whose attitude toward conservation was below that of a savage. General Phil Sheridan appeared before the Legislature with the statement that the bison hunters should be given medals for their bloody work, medals that showed a dead bison on one side and a "discouraged Indian" on the other. "Let them kill, skin and sell," said he, referring to the hunters, "until the buffalo is exterminated, as it is the only way to bring about a lasting peace and allow civilization to advance." What an utterance! And now civilization has advanced and the treatment of both bison and Indian remains a blot on American history. Not until 1894, when the wild bison were reduced to *twenty* specimens, did the American Government wake up to the fact that it should protect the species. From that time on, however, the picture assumes more encouraging aspects, and we are assured now that the bison is safe for all time.

The work of the American Bison Society, organized in 1905, is sketched, and the efforts of many individuals outlined. Canada has done its part nobly. The book is well illustrated with numerous half-tones and drawings by the author and others. Some of the pictures of acres of whitened bones tell the story even more vividly than does the excellent text.

Every library should place this volume on its shelves; every student of nature and conservation should own it. We salute the author who has put on paper one of the greatest pictures of wild life ever produced in print. If ever a book deserved a medal, this one does. It stands for what conservation can, and has, accomplished.—Alexander Sprunt, Jr.

The Fight to Live. By Raymond L. Ditmars. Frederick A. Stokes Co., New York, 1938. 232 pp. 53 illustrations. $2.50.

In *The Fight to Live* Dr. Ditmars has given us a highly interesting treatment of an always pertinent subject. Departing widely from his chosen field of herpetology, he presents much information on the ways of mammals, birds, and reptiles, as well as lower animals, in their never-ending struggle for existence—how they live, why they do

An illustration from The Fight to Live

this or that, and the peculiar and interesting combinations of circumstances that lead to their perpetuation.

Reversing the usual procedure of beginning with the lowest organisms and building up a story of evolution to Man, Dr. Ditmars starts with Man, and goes down the long line instead of up. Space does not allow of detailed comment, but the fascination of the ways of Brush Turkeys, cobras, Komodo 'dragons,' and other reptiles, amphibians and what not, is imparted in a way that makes the reader reluctant to lay the book down until completion.

There is much good conservation between its covers; there is excellent understanding of the predator 'question.' Nature students will gain much new knowledge; teachers will be enriched with much to pass on to their classes; the general reader of natural history will feel that a wide window has been opened on the lives of many creatures of which only the vaguest of ideas were had previously. Who could fail to be interested in the relentless determination of so lowly a creature as the starfish? Who can fail to wonder at the 'smoke-screen' of the squid, the amazing mimicry of the walking leaf?

Ecologists will revel in the sound biology as given in the closing incident of the book which smites 'vermin control' hip and thigh, and at which we feel like giving a loud hurrah. Dr. Ditmars has again done the natural world great good and it is to be hoped that his reading audience will be materially increased by a wide circulation of a valuable, interesting and timely discussion of important knowledge which he has aptly called *The Fight to Live*.—ALEXANDER SPRUNT, JR.

LIFE HISTORIES OF NORTH AMERICAN BIRDS OF PREY (Part 2). By ARTHUR CLEVELAND BENT. Bull. 170, U. S. National Museum, 1938. viii + 428 pp., 92 pl. Price $0.60, Superintendent of Documents, Washington, D. C.

The Bent life-history bulletins on North American birds are among the more widely known and esteemed of ornithological works, and the present volume—the eleventh in the series—follows the general pattern of its predecessors. It should be, moreover, of particular value to persons interested in raptorial species, as it is concerned not only with Owls (Strigiformes) but its discussion of the Falconidae also concludes the treatment of Hawks and allies (Falconiformes) begun in Part 1 (Bull. 167).

While the casual reader may find in this publication much information on birds of prey, it is the technical worker, I think, who will most appreciate it as a source of reference material. The text is rich in those rare details that come to the attention of individual investigators with extreme slowness. Especially useful should be the passages illustrating techniques of capture and handling of prey, glimpses into imperfectly understood phases of behavior, etc.

Reflecting, as it does, the greater part of the pertinent literature that has appeared up to early 1937, this treatise should serve both as a stimulus and a background for future inquiries into the lives and interrelationships of predators and prey of which we really know so little. The basic questions of what has strategic influence in the ecology of wild creatures and what actually determines their population levels and responses under different conditions still await critical analysis and constitute a challenge

to the energy and ingenuity of the young student who may fear that 'everything has already been done.'—PAUL L. ERRINGTON.

THE CALIFORNIA WOODPECKER AND I, A STUDY IN COMPARATIVE ZOÖLOGY. By WILLIAM EMERSON RITTER. The University of California Press, 1938. xiii + 340 pp. Illustrated. $3.50.

As might be understood from the title, this book is an attempt by Professor Ritter to do two things: first, to present original facts, and facts already published by himself, concerning the life-history of the California Woodpecker; second, to compare the California Woodpecker, and animals generally, with Professor Ritter, and man generally, with respect to their ways of life and to the processes regulating their lives.

The book is divided into four parts: One, 'Chiefly Woodpeckers'; Two, 'Chiefly Both of Us'; Three, 'Mind, Brain, Conduct'; Four, 'Chiefly Myself.'

Part One is devoted principally to an account and analysis of the habits of the California Woodpecker. We are presented with a very careful and detailed report of such things as food-getting, the wanderings of the birds, home-life, etc. It is an admirable body of facts. One interesting point is that the California Woodpecker is "communistic"; that is, that more than two individuals may be interested in the same nest. In view of the fact that other Woodpeckers that have been studied show the typical territorial plan of behavior, and that some of their physical characteristics have apparently been evolved with reference to territory defense, it might be interesting to know how the behavior of the California Woodpecker is different from that of other Woodpeckers. Professor Ritter gives us no information about the elements of their social behavior.

The plan of the rest of the book is admirable—Professor Ritter tries to present, for the layman, a picture of the activities of bird and of man, and of the way these activities are governed.

The execution of the latter part of the book, however, is disappointing. In the first place, the resemblances and differences between the life-activities of animals and men have already been described for the layman, and very successfully so, in *The Science of Life*, by H. G. Wells, Julian S. Huxley, and G. P. Wells, to which Professor Ritter does not refer.

Where we expect an explanation of what is known about the functional relation of brain and behavior, to take one example, we find a discussion based on the parallelism existing between comparative behavior and the comparative anatomy of the brain; there is no reference whatsoever to the extensive experiments which have indicated the influence of various parts of the brain on, for example, certain types of learned behavior. Professor Ritter discusses 'mind' at length without ever telling us what he means by it. The discussion of 'mind' and 'consciousness' is so subjective as to be of no value scientifically, and positively confusing for the layman.

Any discussion of the difference between 'learned' and 'unlearned' behavior (or of anything else in science, for that matter) must be based on a sharp differentiation between the 'cause' of an action, and its 'purpose.' Professor Ritter's disregard of the distinction renders his discussions of learning, mind, adaptation, etc., almost without meaning.—D. S. LEHRMAN.

TERRITORY, ANNUAL CYCLE, AND NUMBERS IN A POPULATION OF WREN-TITS (*Chamaea fasciata*). By MARY M. ERICKSON. University of California Publications in Zoölogy, Volume 42, No. 5, pp. 247-334, plates 9-14, 16 figures in text. University of California Press, 1938. $1.25.

This monograph is the newest addition to the ever-increasing list of important studies of single species. It represents three years of painstaking and careful observation. Since all the birds studied were marked, no details of territorial habits are left in doubt.

The territorial habits of this species are of particular interest, as the author points out, because it is a permanent resident, and territory is held throughout the year. The author discusses territory acquisition and defense, pairing, raising of young, population, and related subjects in a way that leaves no doubt as to the thoroughness of the observation.

Data, wherever possible, are presented graphically. There are maps of the study area showing all the territories for each year

of study, individual maps showing the movements of several individuals during definite periods of time, charts showing the activities of the birds during the incubation and brooding periods, and, most interesting and ingenious of all, a table showing the complete history of all the pairs studied, giving such information as time of acquisition of territory, time and duration of pairing, etc. There is a very interesting and convincing demonstration of the dependence of size of territory upon the nature and limits of the brushy growth in which the birds nest. There is a very high correlation between the size of territory and the length of that part of its boundary which is naturally delimited by the configuration of the brush (and which, therefore, does not have to be defended against other Wren-Tits). There is an interesting chapter on the development of the various behavior-patterns in the young.

The book suffers from an all-too-common fault: in spite of the excellence of the observational work, the analysis, especially where it involves discussion of subjects of wider significance than the mere facts of the Wren-Tit's life, is totally inadequate. Even the author's statement, in the introduction, that the work is a "study of Morgan's 'plain tale' with special reference to Howard's interpretation of it," did not prepare me for her absolute disregard (or ignorance) of the large number of critical and analytical papers on territory and sexual behavior that have appeared since Howard's first book. It might be said that she is concerned only with the Wren-Tit, but she discusses things which go beyond the Wren-Tit: the relation of food-supply and territory and the psychological importance of territory as a factor in sexual relations, to mention only two. A scientist who discusses such theoretical questions is obligated to consider *all* the evidence, not only that gathered by himself. In a bibliography of thirty-two titles, only *one* concerns a non-passerine bird, and *none* except the two references to Howard, is of any theoretical importance (actually there are 9 titles mentioned, of papers having some theoretical importance in connection with territory, but only one of these is discussed).

It is certainly to be hoped that more ornithologists will be willing to spend the time and effort necessary to get so complete a picture of the life of one species as is presented in this book, but no science can be very far advanced by so uncritical a treatment of the ideas of others.—Daniel S. Lehrman.

Watching Wild Life. By Phyllis Bond. Longmans, Green & Co., London and New York. 177 pp. Illustrated. 6/.

Miss Bond writes of her experiences in watching birds and animals in the out-of-doors with much charm and vividness. She has such fun doing things that one feels sorry when she remembers that her book has a PURPOSE, that of telling others how to see things; for when she does that, she becomes somewhat pedantic. Fortunately for her readers, she does not remember often, and one reads of her activities and gentle adventures afield with keen enjoyment. Because birds are most interesting of all the outdoor creatures to the amateur, they receive most attention, and even the layman will enjoy reading of their activities.

The book is illustrated with photographs by the author. We advise you to read the book for amusement, for amusing it is, and we hope Miss Bond will write again and as charmingly as in *Watching Wild Life*.—H. G. Cruickshank.

Mysteries of Natural History. By E. L. Grant Watson. Frederick A. Stokes Company, New York. 1938. Illustrated. 244 pp. $1.75.

Everywhere about us things are happening of such amazing strangeness as to be almost incredible. To open our eyes to these phenomena is the purpose of this book of twenty-four stories. Mr. Watson is a capable scientist, who writes of nothing he has not seen. He endeavors to tell his remarkable facts in a popular style. The book will be of interest to those who enjoy gathering strange facts. Of particular interest to those in this country who have studied Starling roosts will be the chapter which tells of Starling roosts in the sedges in England. "There is a tremendous noise of chattering and scolding which can be heard from a far distance . . . a full hour later than their first gathering, they begin to settle

down for the night. The chattering becomes less. . . ."

The wood engravings, illustrating the volume, show each mammal or bird in a characteristic pose.—H. G. CRUICKSHANK.

NATURE IN THE WILD. Charles Scribner's Sons, New York. 95 pp. $2.00.

Over a hundred photographs of natural subjects make up this attractive picture book. There is no text beyond the title of the photograph and the name of the photographer. The photographs were selected from the International Exhibit of Nature Photography at the British Museum (Natural History) in 1935.

Most of the pictures show a splendid pictorial quality. The tiger padding through the jungle, pilot whales cutting through the water, and a Gannet about to land on a cliff with its tail spread and its wings curved, are pictures to attract favorable comment anywhere. Only one who has photographed wild mammals and birds can fully appreciate them. In such a group of superior photographs, one regrets that occasional pictures have been included merely because they are of curious or rare subjects. However, each photograph appears to be a *bona fide* nature picture of a wild creature at liberty in its native habitat. It is pleasant to see that the leading nature photographers are no longer making merely record pictures, but are giving a thought to the pictorial side of the photograph as they take the creature in a characteristic pose.—H. G. CRUICKSHANK.

OUR FRIENDLY ANIMALS: AND WHENCE THEY CAME. By KARL PATTERSON SCHMIDT. Illustrated by WALTER ALOIS WEBBER. M. A. Donohue and Co., 1938. 64 pp. $1.50.

Mr. Schmidt has chosen to write about a topic universally interesting to children. He has answered innumerable 'whys' and 'hows' about animals. This is done in an easily read, simple style without in any way talking down to children. Eight stories about the ancestors of our domestic animals tell where they come from, what they were like long ago, their wild traits, and their place in history. The book will form a source of information in schools and be a welcome addition to home libraries. Twelve full-page drawings in color of the various animals, unfortunately, have been badly reproduced, as they form an important part of the book. However, interesting little sketches of animals on the margins of the pages and the end papers add a great deal to the book. The cover is especially appealing, showing the farm animals with the shadows of their ancestors behind them.—H. G. CRUICKSHANK.

FOREST NEIGHBORS. By EDITH M. PATCH and DR. CARROLL FENTON. Macmillan, New York, 1938. 198 pp. $1.50.

This book is similar in style to the older useful books by Miss Patch and Dr. Fenton. It contains seventeen stories about the birds, mammals, trees, insects, and tree frogs found in a forest. The forest chosen for the stories is in western Ontario but the same or similar forms of life may be found over a large part of North America.

Many drawings by Dr. Fenton, and a few photographs, illustrate the book. The index is complete and contains informative, concise statements about the subjects, as well as the page number. The information is accurate. Moreover, it is told in an entertaining way.

Miss Patch's books can be treated only as nature books, since they obviously do not belong in the literature class. Therefore one finds the names given the characters somewhat startling. One wonders why, if they must have names, they were not given something with a euphonic sound if the authors did not wish to use a descriptive one. In many cases a part of the scientific name has been corrupted with amusing results. *Pinicola enucleator leucura* becomes Pini Cola, which reminds one more of a soft drink than a bird.—H. G. CRUICKSHANK.

CHILDREN OF THE GOLDEN QUEEN. By FLORA MCINTYRE. E. P. Dutton and Co., New York. 80 pp. $1.50.

The story of a bee's life through the year is told by one who knows bees very well since her family have been beekeepers for generations. Miss McIntyre has chosen a particularly happy title for it makes the book at once seem interesting. It is illustrated by photographs that add little to the book. Mr. Teale's *Grassroot Jungles* has taught us to expect far more of insect pic-

tures than is found in the present volume. Children from nine years can read the book. —H. G. CRUICKSHANK.

LASIUS: THE LUCKY ANT. By NINA FREY. E. P. Dutton and Co., New York, 1938. 95 pp. $1.50.

Black and white illustrations by Alma W. Froderstrom add much to this book about ants. Now and then too humanized and a bit sentimental, they are, nevertheless, striking and full of action.

The story itself moves along rapidly. It can easily be read by ten-year-olds. The information is accurate but one feels an artificial excitement pervading it. However, it is a very readable little volume that young children will enjoy.—H. G. CRUICKSHANK.

A NATURE LOVER IN BRITISH COLUMBIA. By H. J. PARHAM. H. F. & G. Witherby, Ltd., London, England, 1937. 292 pp. 8s. 6d. net.

In this book Mr. Parham tells the story of his life in the Okanagan Valley of British Columbia. He settled there in 1906 and bought, near Vaseux Lake, a tract of uncleared land that in succeeding years he cleared of its natural growth and put into orchards.

The book tells the story of this farming venture through the years up to the present time. Interspersed throughout the story are chapters on the various common forms of wild life that anyone living an outdoor life is bound to come in contact with.

Mr. Parham, being a 'nature lover,' records many interesting observations about the various species of the Valley, and in an appendix lists the mammals, fish, plants and birds he recorded for the area.

Mr. Parham is particularly bitter about the way collectors possessing so-called 'scientific collecting permits' have taken every individual they could get of locally rare species. As the Valley represents almost the entire Canadian range of a number of species, such excessive collecting has virtually wiped them out of Canada.

Especially interesting is the tragic story of the last of the Trumpeter Swans of the Valley. Despite a sanctuary and wardens, three of the last Swans were shot by an ignorant immigrant, and the other four were killed by lead poisoning from shot they picked up in the mud of the shallow lake margin.—R. H. POUGH.

THE AUK (July).—The leading article of the July *Auk* is a study of the Eiders of Kent's Island by Dr. Alfred O. Gross. This island, in spite of a strange disposition heretofore manifested by the Bowdoin College group of investigators to wrap it about in a cloud of mystery and remoteness, is really a virtual part of the larger island of Grand Manan and easily reached from there. It is, however, an excellent outdoor ornithological laboratory, and the Eiders are not the first subjects of the study of the Grosses and their staff. Interesting facts brought out in the present paper are that the American Eider is at least to some extent polygamous, and that at Kent's Island it is chiefly a summer resident only, its place being taken in winter by the Northern Eider, which gathers in great rafts off shore. In the second paper Howard L. Mendall brings forward incontrovertible evidence that the Ring-necked Duck has established itself as a breeding bird in Maine and eastern Canada. John T. Zimmer contributes an illuminating paper on the little-known migrations of South American birds. For unexplained reasons he departs from the A. O. U. nomenclature in two or three cases, and while accents over the final vowels of Panama and Peru are needed in the Spanish, it is to be hoped they will not come into fashion in English. Such departures, even in the text of scholarly professional ornithologists, seem to offer good ground for editorial overruling. Olin Sewall Pettingill, Jr., in a paper accompanied by four excellent photographic illustrations, gives instances of what he believes to have been intelligent behavior in the Clapper Rail, and his observations, conducted with painstaking care, seem to prove his point. The latest paper to emanate from the Baldwin Research Laboratory is one of 51 pages on 'Variations in the Weight of Birds' by S. Prentiss Baldwin and S. Charles Kendeigh. It bristles with figures, tables, and graphs, and is not easy reading but will reward the student whose bent lies in that direction. Others may be content to digest the authors'

conclusions, which deal with the variations in weight in reference to the individual and to sex, age, the hours of the day, the seasons of the year, the temperature of the air, etc. The authors' statement that "the minimum temperature usually occurs near daybreak, the maximum usually in early or mid-afternoon" is not supported by data. For the reviewer's neighborhood, at least, sunrise and mid-afternoon, respectively, would be more accurate. Researches into the incunabula of American ornithology are represented in this number by Arlie W. Schorger's transcript of two manuscripts on the Passenger Pigeon contributed by Cotton Mather to the Royal Society in 1712 and 1716. Something that appears to be wholly new in ornithology is the discovery by Herbert Friedmann and Malcolm Davis that some species of Parrots are left-handed! Harold H. Axtell's 'The Song of Kirtland's Warbler' is a minute study of the little-known song of this extremely restricted species. The sound-track as recorded by Mr. Brand, with whom the author was working, showed "an almost continuous slurring up and down with varying degrees of loudness throughout," but it is only the loud parts that are audible to the human ear, and these are heard as separate notes. The author's adaptation of Aretas A. Saunders' system of notation of bird-songs seems to be an improvement on the original so far as easy reading is concerned. This is another of the results of the Cornell song studies, which it may be expected will go on yielding interesting papers for *The Auk*. Charles A. Kofoid's sketch of Francis Orpen Morris (1810—1893) has but slender connection with American ornithology, and yet it is interesting, as all candid studies of personalities must be, and even if we may not agree that Morris's anti-Darwinian screeds actually helped the spread of scientific thought we may admit that they did little to hinder it. Earle L. Poole, in his paper on 'Weights and Wing Areas in North American Birds,' opens up a promising field for further investigation. He finds that the ratio of wing area to weight is much higher in small birds than in large. It is to be hoped that Mr. Poole will follow up this subject and perhaps give more attention to the *form* of the wing and to the various manners in which it is used in flight. For instance, why do two rather closely related birds of practically identical weight, the Solitary Sandpiper and the Spotted Sandpiper, differ so markedly in wing area? Here, of course, two very different manners of flight are involved, and these are correlated, doubtless, with ecological factors. We note one little error, where, on page 512, 'Coots and Gallinules' should obviously be substituted for 'Rails.'

Three other interesting papers, upon which there is no space left for comment—W. Bryant Tyrrell's 'Nesting of the Turkey Vulture,' John Ripley Forbes' 'Recent Observations on the Greenland Wheatear,' and George Miksch Sutton's 'Some Findings of the Semple Oklahoma Expedition'—round out a number that is well balanced so far as titles are concerned, even if, perhaps, a little over*weighted* in the matter of space.

We must take space for comment on one of the General Notes—that on 'Black Vulture Following Aëroplane.' In a personal letter to the reviewer Mr. McIlhenny explains the attainment of a speed seemingly so impossible for a comparatively slow-flying bird, by saying that the Vulture evidently availed itself of the suction of the plane. It seems possible, too, that it may have acquired a considerable initial velocity by dropping from a great height.—Francis H. Allen.

The Auk (October).—The leading article for this number is in the field of taxonomy, a study by James Moffitt of the downy young of *Dendragapus*. Mr. Moffitt supports the Fourth Edition of the *A. O. U. Check-List* in making the Dusky Grouse and the Sooty Grouse separate species, as against Peters's *Check-List of the Birds of the World*, which lumps all the races under the single species *obscurus*. It should be borne in mind, however, that coloration in the downy young is not necessarily more 'fundamental' than that of adults. In some Terns, for instance, there are remarkable color-differences in the downies in the same colony of a single species. Two other papers in systematic ornithology are 'A New Eastern Race of the Canada Goose,' by W. E. Clyde Todd, and 'A New Genus and Species of Mexican Flycatcher,' by John T. Zimmer. Mr. Todd's

Branta canadensis interior breeds on the eastern shore of Hudson and James Bays and migrates mainly west of the Appalachian Mountain system. Mr. Zimmer's new Flycatcher is described from a single specimen in the American Museum of Natural History that was collected in 1908 but wrongly identified at the time. Malcolm Davis gives an interesting account of the courtship and unsuccessful nesting of a pair of Flightless Cormorants (of the Galápagos) in the National Zoölogical Park in Washington. E. A. McIlhenny gives at some length indisputable evidence of the breeding of the Florida (Sandhill) Crane in Mississippi, with photographs of eggs and young. A. Marguerite Baumgartner's 'Seasonal Variations in the Tree Sparrow' continues this author's very minute and comprehensive study of the species with a full description of molt, feather-renewal, weight, fat-content, size of stomach, development of skull, and development of gonads. Mrs. Baumgartner found that the ovaries of the female developed later in the autumn than the testes of the male. F. B. Hutt and Lelah Ball, in their paper entitled 'Number of Feathers and Body Size in Passerine Birds,' show that small birds, whose small surface area puts them at a disadvantage in retaining their body temperature, compensate for their lack of size, not only by a higher metabolic rate but also by possessing a proportionately greater number of contour feathers than larger birds. Using Cornell sound records of birds' songs, Sydney E. Ingraham, in her 'Instinctive Music,' analyzes the songs of six species with the technique of an advanced student of musical theory and finds that birds appear to use not only a somewhat imperfect arithmetrical scale—that is, a scale in which the frequencies increase by arithmetrical progression—but also an approach to our own geometrical scale, in which the frequencies double at every octave. She also considers that the Veery possesses a genuine musical ear and can produce pure fifths over and over again. The latter part of her long and very technical paper is devoted to a general discussion of musical instinct, both human and avian, and the physical scale. Mrs. Ingraham does not believe that birds have any real musical system, but she thinks that they are "sensitive in much the same way as we to the laws of Nature." The paper, in spite of its rather severely technical character, really contains not a little of interest to the average bird-student. In a number that is, perhaps, somewhat more technical than the average issue of *The Auk*, A. Dawes Dubois's account of his observations at a Rufous Hummingbird's nest stands out as a piece of very readable, though none the less scientific, life-history work. The author's dramatic impersonation of a balsam tree enabled him to watch the feeding of the young at a distance of only 10 to 12 inches from his eyes. The article is accompanied by a very beautiful photograph of the female Hummer at the nest. William L. Engels devotes eight pages to a thorough description of the musculature of the tongue in passerine birds after examination of nineteen species belonging to seven families, besides a study of the literature. He found himself able to correct "eight major errors" in Shufeldt's *Myology of the Raven*. 'A Facial Anomaly in a Pheasant,' by Robert M. Stabler, completes the list of body articles. As usual, the General Notes, the reviews, and the obituaries supply much interesting and valuable reading.—Francis H. Allen.

Bird-Banding.—In the January issue M. M. Nice discusses 'The Biological Significance of Bird Weights' and shows that we are still far from understanding all the problems concerning weight. Most birds are much heavier in the winter than at other seasons, others not; some birds lose weight steadily after midwinter, others reach a new peak before the spring migration; incubating females may gain weight, but feeding adults always lose considerably. To retain their weight, small birds eat more, relatively much more, than big ones, and more in cold weather than in warm. Let us hope that the banders will be stimulated by this paper to collect and analyze more bird weights. Dr. Austin summarizes some of the results from the banding of 112,707 Terns at Cape Cod. The much lower mortality of adults makes banding of them particularly profitable and yielded about 25 per cent returns, but up to 44 per cent in some years. Terns lay fewer eggs in their first year of nesting than in later years. The composition of the population of new colonies and the

methods of their establishment are discussed. In the detailed population analysis (5 graphs) survival is erroneously taken as an index of fecundity, although it is admitted that 13-year-old birds lay clutches of more than average size and normal fertility. L. H. Walkinshaw's 'Nesting Studies of the Prothonotary Warbler' is a prime example of a statistical life history. Practically no problems are touched on, next to nothing of the behavior is discussed, but everything is measured that has any dimensions in time or space. As valuable as these data may be, I should have liked to hear something of the results of the "204 hours spent studying the species." A paper on sex-determination in breeding birds, the first report on the results of the Gull Survey, and several smaller papers round out a particularly good number of this ever-growing journal. In the April issue, A. M. Baumgartner continues her Tree Sparrow serial with a study of the development of young birds. Hatching, physical development, growth of body weight and feathering, fledging, change of behavior of growing young, and corresponding behavior of the parents are discussed. The study would have gained much in interest if reference had been made to similar studies on other species. May Thacher Cook continues her useful list of returns of banded birds, treating the Herons, Spoonbills, Rails and other marsh-birds. M. Herman reports on some inconclusive data which suggest a preponderance of males in the Red-wing. F. P. Mangels gives some very useful remarks on the use of colored bands, indicating the number of possible combinations with a given number of bands and colors, and the most suitable method for arranging data. In the July issue R. S. Palmer discusses the high mortality of young in several Tern colonies along the Maine coast during 1937. Abnormally cold and wet weather was apparently the principal cause, although a detailed analysis is lacking. A. Marguerite Baumgartner describes in detail her very useful method of marking individual birds with combinations of colored feathers. This method yielded interesting results on range of the Tree Sparrow in wintering flocks. Of 81 birds marked at the feeding stations, 7 disappeared completely, 9 stayed within 500 feet of the traps, the remaining 65 birds moved within an area of 500 to 6800 feet from the traps, most of them less than 2000 feet. The more extensive movements were largely due to fall settling, spring excitement, and midwinter storms. D. C. Boughton and J. J. Volk give a useful compilation of avian hosts of Eimerian coccidia and a list of the known species of Eimeria, but it is not clear to me why this paper should be published in *Bird-Banding*. Mrs. Nice's reviews of the current literature, so indispensable to every working ornithologist, are as well-organized and exhaustive as ever.—Ernst Mayr.

The Wilson Bulletin (June).—'The American Coot in Iowa,' by Charles E. Friley, Jr., Logan J. Bennett, and George O. Hendrickson, contains data of various sorts of the abundance, nesting activities, habits of the young, and interspecific relationships of the species in question. Of particular interest is the statement, based on forty-two nests, that approximately as many days were required for hatching a full brood as there were eggs in the nest. 'Bachman's Sparrow in the North-central Portion of Its Range,' by Maurice Brooks, gives a very detailed account of the bird as it occurs, or has occurred, in southeastern Ohio, West Virginia, and southwestern Pennsylvania. It is of relatively recent occurrence in this region and reached a maximum of abundance from 1915 to 1922 since when it has become reduced in numbers. Important notes are given on habits, range, habitat, and such characteristics, including injury-feigning in this and several other Sparrows. 'A Predator-Prey Relationship between the Short-eared Owl and the Meadow Mouse,' by L. L. Snyder and C. E. Hope, reports a convergence of the Owl in the Toronto region at a time of unusual abundance of meadow mice. 'Food Habits of Buteo Hawks in North-central United States,' by Paul L. Errington and W. J. Breckenridge, concludes that there is little preference held by these birds for a particular type of prey but that availability is a prime factor which the 'education' of the individuals may modify to some extent. 'Nest Life of the Bank Swallow,' by Leonard K. Beyer, gives the results of detailed daily observations

made after opening the nesting cavities from behind. General Notes from eleven different states, and the District of Columbia, contain a variety of interesting matter. Reviews of current books, articles, and periodicals and a section devoted to Communications from the readers close an interesting number.—J. T. ZIMMER.

FLIGHT. By Albert Dixon Simmons. National Sportsman Magazine, Boston, 1938. $2.00.

This is a portfolio of twelve of the most satisfying photographs of birds in flight that I have seen. It gives detail and clarity to our knowledge of the flight of birds, and at the same time the photographs are extremely decorative and beautiful. There is a sensation of speed here, which the camera study only rarely gives. An unusual and fortunate combination of birds and background composition gives a feeling of swift motion.

Mr. Simmons, in accomplishing this in photography, where the bird must be caught in a fraction of a second, deserves great credit. The Cooper's Hawk and Mourning Dove is a remarkable picture, and the American Widgeon and towering Black Duck especially fine. Bird photography moves forward.—F. L. JAQUES.

Recent Publications

Edited by S. C. HARRIOT

ALLEE, W. C. The Social Life of Animals. New York: W. W. Norton & Co. $3.00.

ANON. Soils and Men. U. S. Department of Agriculture Yearbook of Agriculture for 1938. Washington, D. C.: Superintendent of Documents. $1.75.

ANON. Two Home-made Traps for English Sparrows. Wildlife Research and Management Leaflet BS–121. Washington, D. C.: U. S. Bureau of Biological Survey. Free.

BLACKMAN, MRS. WILLIAM F. Florida Audubon Society, 1900–1935. Sanford, Fla.: The Florida Audubon Society. 50 cts.

BODENHEIMER, F. S. Problems of Animal Ecology. New York: Oxford Univ. Press. $4.00.

BUCHSBAUM, RALPH. Animals without Backbones. Chicago, Ill.: Univ. of Chicago Press. $5.00.

COMMONS, MARIE A. The Log of Tanager Hill. Baltimore, Md.: Williams & Wilkins Co. $2.50.

COTTAM, CLARENCE. The Coordination of Mosquito Control with Wildlife Conservation. Wildlife Research and Management Leaflet BS–119. Washington, D. C.: U. S. Bureau of Biological Survey. Free.

COTTAM, CLARENCE and HAROLD C. HANSON. Food Habits of Some Arctic Birds and Mammals. Chicago, Ill.: Field Museum of Natural History. 20 cts.

DIXON, JOSEPH S. Birds and Mammals of Mount McKinley National Park. Fauna Series No. 3. Washington, D. C.: Superintendent of Documents. 35 cts.

FAIRCHILD, DAVID G. The World Was My Garden. New York: Charles Scribner's Sons. $3.75.

FENTON, CARROLL LANE. Our Amazing Earth. New York: Doubleday Doran & Co. $4.50.

GORDON, SETON. Wild Birds in Britain. New York: Charles Scribner's Sons. $3.50.

GREEN, CHARLOTTE HILTON. Trees of the South. Chapel Hill, N. C.: Univ. of North Carolina Press. $2.50.

HALL, CYRIL. The Sea and Its Wonders. New York: M. S. Mill Co. $2.50.

HAMLETT, G. W. D. The Reproductive Cycle of the Coyote. Tech. Bull. No. 616. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 10 cts.

HAWKES, CLARENCE. Notes of a Naturalist. Boston, Mass.: Christopher Pub. House. $1.25.

HIBBEN, FRANK C. A Preliminary Study of the Mountain Lion. Bull. 318. Albuquerque, N. Mex.: Univ. of New Mexico. 50 cts.

HYLANDER, CLARENCE J. The World of Plant Life. New York: Macmillan Co. $7.50.

KALMBACH, E. R. Botulism, a Recurring Hazard to Waterfowl. Wildlife Research and Management Leaflet BS–120. Washington, D. C.: U. S. Bureau of Biological Survey. Free.

LEWIS, ERNEST. In Search of the Gyr-Falcon. An Account of a Trip to Northwest Iceland. London, England: Constable. 12s. net.

LORD, RUSSEL. To Hold This Soil. Misc. Pub. No. 321. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 45 cts.

LUTTRINGER, LEO A., JR. Pennsylvania Bird-Life. Harrisburg, Pa.: Pennsylvania Game Commission. 10 cts.

MACLULICH, D. A. Birds of Algonquin Provincial Park, Ontario. Contribution No. 14. Toronto, Canada: Royal Ontario Museum of Zoölogy. 25 cts.

MILLS, E. M. Protecting Orchard Trees from Deer. Wildlife Research and Management Leaflet BS–117. Washington, D. C.: U. S. Bureau of Biological Survey. Free.

MORTON, JAMES N. Wildlife in the Farm Program. Bull. 16. Harrisburg, Pa.: Pennsylvania Game Commission. Free.

MUNNS, E. N. The Distribution of Important Forest Trees of the United States. Misc. Pub. No. 287. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 35 cts.

OBERHOLSER, HARRY C. The Bird Life of Louisiana. Bull. No. 28. New Orleans, La.: Department of Conservation. $1.00.

PEATTIE, DONALD C. and GORDON AYMAR. This Is Living. New York: Dodd, Mead & Co. $3.75.

RANDALL, CHARLES E. and D. PRISCILLA EDGERTON. Famous Trees. Misc. Pub. No. 290. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 15 cts.

ROBERTSON, A. W. P. and R. D. POWELL. Bird Watching Days. New York: Wm. Collins & Co. $2.50.

ROWALT, E. M. Soil Defense in the South. Farmers' Bull. No. 1809. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 10 cts.

SCHRENKEISEN, RAYMOND. Field Book of Fresh Water Fishes of North America. New York: G. P. Putman's Sons. $3.50.

SCOTT, PETER. Wild Chorus. New York: Charles Scribner's Sons. $40.00.

SCOTT, THOMAS G. and GEORGE O. HENDRICKSON. Nesting Birds of Iowa. Ext. Circ. 247. Ames, Iowa: Iowa State College. 10 cts.

SMITH, FRANK R. Muskrat Investigations in Dorchester County, Md., 1930–1934. Circular 474. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 10 cts.

SNYDER, L. L. A Faunal Investigation of Western Rainy River District, Ontario. Contribution No. 14. Toronto, Canada: Royal Ontario Museum of Zoölogy. 25 cts.

SPENCER, DONALD A. Cultural and Other Methods for the Control of Injurious Wildlife. Wildlife Research and Management Leaflet BS–115. Washington, D. C.: U. S. Bureau of Biological Survey. Free.

SQUIRE, LORENE. Wildfowling with a Camera. Philadelphia, Pa.: J. B. Lippincott Co. $7.50.

VANTYNE, JOSSELYN. Check List of the Birds of Michigan. Occ. Paper No. 379. Ann Arbor: Univ. of Michigan Press. 25 cts.

For the convenience of our readers, all of the books listed above, with the exception of State and Federal publications, may be purchased from the Service Department of the AUDUBON ASSOCIATION.

Big Chicken Hawk Kill

Such is the heading of a newspaper item that appeared recently in the Central City (Nebraska) *Nonpareil* and was widely reprinted in other Nebraska papers. It clearly indicates why the National Association of Audubon Societies has a Persecuted Species Department, and why that Department needs all the support, financial and otherwise, that it can obtain from members, that it may spread its educational work more widely.

The item ran as follows:

The amazing total of 225 Chicken Hawks was shot in a two-hour hunt by Carl Brandes, his three sons, and three neighbors Monday night in the grove just north of the Brandes farm home, seven miles north of Central City.

A flock of Hawks estimated by the hunters to be about a thousand roosted for the night. Earl Brandes suggested a hunt and with his two brothers, Harold and George, went to town for shells. Meanwhile, Dave Johnson, Charles Matthes and Carl Timm were called.

About nine o'clock the men started a barrage with their shot-guns until their supply of 100 shells was used up. The birds fluttered a little but did not fly away as Crows would do. Then with illumination from flashlights, they dropped the birds singly until a case of 500 rifle shells had been exhausted at 11 P.M. Tuesday morning the count was placed at 225.

"I have never seen so many Hawks in my life," said George Brandes. He estimated that the average wingspread was three feet. The birds were left where they fell.

Unfortunately, such wanton slaughter and the joy of mere killing that it displays, is not rare. Similar stories, involving various species of wild life against which people harbor prejudice, come to us continually. It seems not to matter that the mammals or birds (Broad-wings in this case) are protected by state law, and are of tremendous value to farmers and ranchers in a rodent- and grasshopper-ridden country like Nebraska.

Game commissions, by and large, seem loth to act, and cases of convictions are few and far between. Such will inevitably continue to be the case until we have progressed farther with our educational work. Can't you help at this time, either with a contribution towards the cost of printing educational material, or by distributing some of our present supply to persons in your locality to whom our message may carry a new viewpoint?—RICHARD H. POUGH.

THE SEASON

CXXIV. August 15 to October 15, 1938

Boston Region.—The last half of August was approximately normal. No special climatic features occurred in September until about the 15th, when heavy rains again flooded ponds and marshes. The historic hurricane struck in at the head of Buzzard's Bay on September 21, spreading death and destruction, and roared northward through the central uplands of Massachusetts and southern New Hampshire, and the Connecticut Valley just to the west. The mainland coast of Massachusetts escaped with little damage and the outer cape was entirely east of winds of hurricane force. On the whole, September and the first days of October were relatively cool, after which unusual heat lasted to the close of the period.

As a general thing the tendency noted in the last report has been fully confirmed. On the whole, the summer residents departed southward very early, and transients and winter visitants put in their first appearance ten days or more ahead of normal. On the other hand, direct connection between a belated effort to breed and a late departure date was definitely established in several cases. Thus 2 Wood Pewees were found feeding newly fledged young at Chatham on September 6, two months later than normal, and a week after, the majority of this common summer resident had departed southward. It was not surprising, therefore, to record the species on October 1, my first and only 'October date.' In eastern Massachusetts there was a marked early wave on August 25; a great wave flooded the entire state on September 9 and 10, and another great wave came on September 25, when the list of birds near the coast approximated that of October 10 in other seasons. These three flights coincided with the only pronounced cool waves with northwest winds during the period.

In the last report the exceptionally favorable conditions in all of our inland swamps and meadows were stressed. These conditions terminated with the heavy rains of mid-September, but for the preceding month a truly spectacular number and variety of Ducks, Herons, and shore-birds gathered in such places.

The effects of the hurricane deserve a brief summary. The first, dear to the local observer, is the waifs and stragglers found; the second, and much more important, is the loss of life in the normal population present. As regards the first category, 3 Yellow-billed Tropic Birds were found in Vermont, the only New England records. All the remaining stragglers of note were sea-birds, common in the waters south of Massachusetts at the time, and all were found at inland points in the main path of the hurricane. Thus the Gannet, Greater and Cory's Shearwater and Leach's Petrel were picked up in Vermont. A larger number of individuals of the last three were found in the Connecticut Valley in Massachusetts along with Laughing and Bonaparte's Gulls, Common and one Forster's Tern (Eliot). I am not aware of any previous inland record for Cory's Shearwater, and there is a very pretty correlation here with its exceptional abundance in Nantucket Sound and Buzzard's Bay at the time.

The other effect is much more difficult to determine and will require careful observation next spring and summer. In the central uplands of Massachusetts and southern New Hampshire, where thousands of acres of white pine forest were flattened down in ten minutes, it seems incredible that considerable loss of life did not take place. A notably common summer resident of these areas is the Blue-headed Vireo, which had barely begun to depart by September 21. This bird is a common fall transient near Boston, but this year the great majority of active observers have not laid eyes on a *single individual;* indeed the number of the very rare Philadelphia Vireo reported to me, locally, is greater than the total number of Blue-headed!

Pacific Loon, 1 off Monomoy Point, October 2 to 9, adult still in partial breeding plumage with gray head and neck and black throat (6 observers). Pied-billed Grebe, poor flight, especially in Connecticut Valley.

Cory's Shearwater, exceptionally common again, August 31, on inside of Nantucket and Monomoy Point. Greater Shearwater, far fewer than normal. Sooty Shearwater, very small numbers, as is normal.

European Cormorant, arrived off Marblehead as early as August 20 (Curtis). Double-crested Cormorant, heavy flight.

Southern Herons: Small numbers after August 15 of Egrets and Little Blues; a very few Yellow-crowned Night Herons; all three remaining into October.

Ducks, etc.: Snow Goose, 3 off Monomoy, October 1 (Garrison and Griscom). Notable flight of Blue-winged Teal, nothing like it recorded since 1882. All the other Anatinae in exceptional numbers prior to September 15; nothing worthy of note thereafter. Surf Scoter, abundant for the first time in many years, more off Monomoy in 3 weeks than preceding 10 years combined.

Gulls and Terns: Unusual number of Ring-billed Gulls. Relatively few Black, Caspian and Forster's Tern reported. Great flight of Parasitic Jaegers, August 15 to October 1, almost as many as last year, and no less than 5 Long-tailed Jaegers. Very few Pomarines.

Red-headed Woodpecker, 1, Amherst, September 4 (Miss Parsons); Arkansas Kingbird, 2 reports; Winter Wren, unusual number near Boston, where uncommon; Gnatcatcher, 3 birds in all near coast; Migrant Shrike, 6 reports; Golden-crowned Kinglet, notably abundant throughout; Yellow-headed Blackbird, adult female, Monomoy, August 25 (Mrs. Fuller and Maclay); Western Tanager, male, Belchertown, October 2 and 3 (Howard Knight); Cardinal, female, Warren, R. I., October 9 (Bowen); Clay-colored Sparrow, Lynnfield, October 9 (Emilio, Griscom and many others).—Ludlow Griscom, *Museum of Comparative Zoology, Cambridge, Mass.*

New York Region.—From the middle of August through the middle of September the weather was quite normal, with moderately warm days and intermittent showers. Ponds were beginning to show bare shorelines, and the strong sun was wilting the lawns along the beach. Tree foliage was heavy, as was the underbrush, to the discouragement of the field observers who tried to spot the tiny migrants as they slipped through walls of leaves. The shallow ponds and shores of the ponds made the observation of shore-birds and marsh-birds quite easy, and many field students visited our ocean beaches in quest of rarities. About September 14 a rain commenced to fall that did not cease until the 22d. On September 19 a hurricane was expected to strike Florida, but two tremendous low-pressure areas whose peripheries formed a furrow, parallel to the east coast of the United States about 200 miles offshore, sucked the hurricane due north. The hurricane swept up the furrow over the ocean until it reached Long Island, where it struck with its terrifying speed and strength about 4 o'clock in the afternoon on September 21. The hurricane went north and finally dissipated itself near Hudson Bay. The wind was estimated to have reached from 100 to 185 miles an hour, and was a true tropical hurricane. Trees, a century old, fell on all sides, and ocean beaches were leveled to flat bars, giving no evidence of the high dunes that once were present. We shall never know the toll that the wind and water took of our birds. On the ocean beaches, the debris and sand buried hundreds of dead birds that may take months of water and wind to uncover. Following the great storm the weather was clear and cool with great migrations on land and shore and sea. Large lists were compiled on Long Island, for the birds were everywhere. Hawk migrations were noted in many parts of the region, and large numbers were counted in northern New Jersey.

A good shore-bird flight was noted on September 13 (Mayer). Small birds were plentiful on the 16th. During the hurricane a great flight of Laughing Gulls was noted off Long Beach, L. I. The day after the storm several western species were noted in the Long Island region, and subsequent days added to the list of western species noted. On September 27, near Easthampton and

surrounding country, Chickadees were very common, indicating a migration of these sedentary birds. Jays were very common on the 24th and 25th in the pine barrens of Long Island. On September 27 a Bob-white and newly hatched young were seen at Brookville, L. I., a late date (Cruickshank). The lateness of the hatching was probably due to the rain and cold. Other good flights of birds were noted on September 27 and 28, and October 1 and 2.

Increasing numbers were indicated by the frequency of reports of large flocks of Blue-winged Teal; Golden Plover, though never seen in large flocks, were noted in many localities.

Dead birds found after the storm included the following: Sora Rail, Pied-billed Grebe, Common Tern, Mute Swan, Herring Gull, and Great Blue Heron (Helmuth); King and Clapper Rails (Cruickshank).

Pelagic birds were uncommon during this period and the records are few: Cory's Shearwater, 1, September 10, and 2, October 9, Montauk (Mayer); Greater Shearwater, 1, August 23, Atlantic Beach (Mayer); Mediterranean Shearwater, 1, found dead on the beach at Montauk Point in early October, a victim of the storm (Helmuth); Gannet, 1, August 20, Oak Island Beach, a very early migrant or straggler (Mayer); Red Phalarope, 1, September 22, directly after the storm (Cruickshank); Pomarine Jaeger, 1, at Jones Beach, October 1 (Cruickshank), and 1, at Montauk, October 9 (Mayer); Northern Phalarope, 1, Newark Meadows, September 3 to 5 (Brown, Eynon, Rosenblum); Parasitic Jaeger, 16 birds noted in Gardiners Bay, Long Island, August 16 (Helmuth).

The white Herons were quite common up to the week of the storm, widening their distribution of the early summer. Egrets were noted up to the end of the period under consideration, in small numbers. Snowy Herons were seen at Newark Meadows, August 20 (Eynon); 2, Pocaboque Pond, L. I., August 25 (Helmuth); 1, Long Branch, N. J., September 5 (Black and Seeley); 1 or 2 were present at Jones Beach up to September 14 (Cruickshank, Sedwitz, Jacobson, *et al.*). Yellow-crowned Night Heron was observed at Idlewild, L. I., August 19, an immature (Mayer); an adult at Newark Meadows on September 13, and 2 immatures on September 27 at the same place (Eynon).

Black Skimmers were still feeding their young of a few days on September 10, at Gilgo Island, L. I. (R. P. Allen and Cruickshank); an immature Skimmer was noted at Rockaway Point, October 9, a fairly late date (Jacobson).

Our own Hawk Mountain was made an established fact when the New Jersey ornithologists located a spot along the ridges near Montclair, N. J., that bids favorably to compete with the Pennsylvania vantage-point. On September 25, about 2600 Hawks were noted at Upper Montclair, N. J., by the Urner Ornithological Club and other observers, 2473 being Broad-winged Hawks, and 113 Sharp-shinned Hawks. On October 2, 123 Sharp-shinned Hawks were noted at the same location by the same observers.

Among the rare Terns and Gulls noted, the following few are the most noteworthy: Black-headed Gull, an immature bird seen along the beach at Georgica Pond, Long Island, and shot at, but not collected (Helmuth) on October 11; Franklin's Gull, a bird in winter plumage seen at Long Beach, September 25, under observation for several minutes at close range; this record, however, is open to correction until a bird is collected or other records corroborate the occurrence of this rare bird on Long Island (R. Allyn, Breslau, Carleton, Jacobson, and Sedwitz); Sabine's Gull, 1 noted over the surf by W. T. Helmuth III and brother, at Easthampton, L. I., October 10; Gull-billed Tern, 1, at Idlewild on August 18 (Mayer); Sooty Tern, 1, a record sent in without data, except that it was seen at Manorville, L. I., on September 21, during the lull in the hurricane, and in company with Least Terns (G. Raynor).—Walter Sedwitz, *New York, N. Y.*

Philadelphia Region.—The period from August 15 to October 15 averaged somewhat milder than usual. The hurricane, which created havoc in the New England States September 21, did considerable damage on the New Jersey coast, although the area did not catch the full force of this disturbance.

Doubtless the occurrence of unusual num-

bers of Golden Plover and other rarities in this area immediately after the hurricane were due directly to it. Mt. Holly, N. J., September 25, Golden Plover, 8 (J. Cadbury); Tinicum, Pa., September 28, Golden Plover, 20 (Lindauer); Glenolden, Pa., September 21, Black-necked Stilt, 1 (Lorup); Fort Mott, N. J., Avocet, 2 (seen by many observers on and after September 25, still present October 15).

Two rather interesting bird-roosts were located during the late summer (Potter). Berlin, N. J., roost occupied by: Purple Martins, 30,000; Starlings, 25,000; Cowbirds, 3000; Grackles, 500; Barn Swallows, 50; Robins, 100. Number of Martins in the roost gradually decreased until September 21 when only 4 were seen. Bobolink roost at Bridgeport, N. J., was apparently the nightly rendezvous for all Bobolinks in the lower Delaware Valley. On September 4, the roost, an area of wild rice and cattails some 250 acres in extent, was estimated to average 1 Bobolink per square yard, or approximately 1,000,000 Bobolinks for the area. In this immense gathering one albino was noted—one in a million. On September 10 the number of Bobolinks had decreased to 2000.

Observers report exceptional numbers of White-throated Sparrows, Ruby-crowned Kinglets, Golden-crowned Kinglets and Winter Wrens this fall.

Other records of interest: Delair, N. J., September 24, Hooded Merganser (Walton). Beach Haven, N. J., August 21 to October 1, Marbled Godwits, 2 to 7 (numerous observers). Stone Harbor, N. J., October 7, Golden Plover, 6 (J. Cadbury). Brigantine, N. J., August 19, Golden Plover, 4 (Groskin). Plainsboro, N. J., October 15, Golden Plover, 1 (Storer). Brigantine, N. J., August 29, Golden Plover, 2 (Clark). Chestnut Hill, Pa., August 25, Olive-sided Flycatcher, 1 (Clark). Plainsboro, N. J., September 28, Connecticut Warbler, 2 (Watson); October 7, Red Phalarope, 1 (France). Holgate, N. J., October 9, Parasitic Jaeger, 12 (Rogers). Brant Beach, N. J., October 15, Parasitic Jaeger, 4 (Yoder). Cape May, N. J., October 9, Magnolia Warbler, 1 (Watson). Brigantine, N. J., October 16, Black Skimmer, 90 (Storer). Atlantic Ocean, 10 miles east of Cape May, August 14, Cory's Shearwater, 21 (Lindauer and others). Tuckerton, N. J., August 14, Snowy Egret, 1 (De Cou); August 21, 2 (Livingston); August 28, 5 (Gillespies). Tinicum, Pa., September 1, Snowy Egret, 1 (Lindauer). Wind Gap, Pa., August 20, Nighthawk, 80 (Livingston). Chestnut Hill, Pa., Nighthawk, 300 (Clark). Delaware City, Del., September 9, Mockingbird, 8 flushed from one tree (Moore). Fort Mott, N. J., October 8, Black Duck, 30,000, Pintail, 70,000, small numbers of Shovellers and Green-winged Teal, Bald Eagle, 11. Dividing Creek, October 9, Migrant Shrike, 1 (Brown and others). Brigantine, N. J., August 28, Forster's Tern, 1 (C. Ross). Reading, Pa. Reservoir, September 11, Caspian Tern, 2 (Lindauer). Hawk Mountain, Pa., September 24, Broad-winged Hawk, 4325 (Broun). Harrisa, N. J., October 2, Ruffed Grouse, 1 (Corn and Jacobs). Almonesson, N. J., October 4, White-crowned Sparrow (Batezel). Absecon, N. J., August 29, Sharp-tailed Sparrow, 500 in one reach of high marsh grass. Chestnut Hill, Pa., October 1, Blue-gray Gnatcatcher, 1 (Clark).—JULIAN K. POTTER, *Collingswood, N. J.*

Washington (D. C.) Region.—Moderate temperature characterized most of the period of August and September, 1938, in the Washington Region. There were almost no excessively hot days during this time. Except for a week or so about the middle of September there was relatively little rain and, therefore, the weather was mostly fair.

The migratory movements of birds seemed to be about normal, and there is nothing of extraordinary interest to report. Some of the birds, like the Tufted Titmouse and the Eastern Robin, continued their singing at least into early September. Birds of most species were rather numerous about the middle of September, both in species and individuals.

The American Egret was abundant at various places along the Potomac River for some distance below Washington about September 16. The Little Blue Heron was common on the same date in the same localities, and was observed by W. H. Lawrence on September 24 above Chain Bridge, which is several miles west of Washington on the

Potomac River. By September 16 the Ring-billed Gull was common along the Potomac River below Washington.

Ducks have not yet appeared in large numbers on the river, although a few Mallards and Lesser Scaup Ducks were seen near Washington on September 16, the latter on the Roaches Run Sanctuary in Virginia a short distance below Washington.

One of the most interesting records, on account of its early date, was a flock of 35 Canada Geese, seen on September 16, flying up the Potomac River near Fort Washington, which is approximately 10 miles below the city of Washington.

On September 16, also, a single Sora Rail was found on an upland highway near Fort Hunt in Virginia, a short distance below the city of Washington. It had been killed by a passing automobile. A single Alder Flycatcher was seen in the woodlands near Dyke, Va., below Alexandria, on September 16. This bird is, in this region, one of the less numerous of our small Flycatchers.

In the autumn the Northern Bald Eagle occasionally shows a decided increase in numbers along the Potomac River below Washington. This may be due in part to the young of the year, or it may be due to an influx of more northern birds. Such a condition obtained this year, and on September 16, altogether, 13 were observed along the Potomac River between Washington and Mount Vernon. In one place, about opposite Four Mile Run, Va., 6 were seen standing in very shallow water on a bar in the middle of the river, apparently watching for fish or other prey.—HARRY C. OBERHOLSER, *Biological Survey, Washington, D. C.*

Pensacola (Fla.) Region.—Extreme dryness has characterized the period. No rain of consequence has fallen since the first week of August, and at the present writing, late in October, the drought has not yet been broken. The whole region is dry and dusty, and many serious and widespread grass and brush fires have destroyed much cover and great quantities of seed and berry foods.

The drying of the upland ponds may account for the scarcity of Solitary and Pectoral Sandpipers and Lesser Yellow-legs, but it does not explain the scarcity of shorebirds in general. The July influx was about normal, as noted in my report for the preceding period, but both numbers and variety fell off instead of increasing in August and September. Such usually abundant species as Least, Semipalmated, and Western Sandpipers have been positively rare, and even our resident Cuban Snowy Plovers have been hard to find. Sanderling and Black-bellied Plover are the only species present in their usual numbers at the close of the period.

The unusual number and variety of Herons, reported in the preceding period, diminished sharply with the drying of the ponds. Snowy Egrets continued to be common as long as any water remained, and a group of 9 was seen in the last of the roadside ponds when it had dried to a mudhole less than 30 feet in diameter.

The surprise of the period was the discovery that the 3-mile, low-level bridge across Pensacola Bay takes a serious toll of night-flying migrants. The roadway of the bridge is not more than 15 feet above the water and there are four electric light wires strung on poles about 25 feet higher. There is no superstructure. I had occasion to cross the bridge almost every afternoon in September, and in that time I picked up 63 identifiable specimens of 19 species, and about as many others had been so badly crushed by traffic as to be unrecognizable. Of the 63, 30 were Yellow-throats. A number of these had fallen along the edges of the roadway where the passing wheels could not touch them and their plumage was unmarred. The birds of a single day's gathering often clearly represented two or more races—our small, dark resident form and one of the decidedly larger and paler northern forms—but, after a full day's exposure in the hot sun, they could not be preserved for further study and subspecific identification. Only one of the 30 was an adult. Of the other 18 species, several were of particular interest. The Rails were represented by 3 species: 4 Soras, 4 Virginia Rails and 1 Yellow Rail. The Sora of September 3 was the earliest I have ever known, and the Yellow Rail of September 23 was only the fourth ever known in Florida. A single Bobolink on September 17 was an

uncommon visitor. Four Water-Thrushes were clearly the Northern and not Grinnell's. The Yellow-breasted Chat, uncommon in spring and known in fall only from a single observation several years ago, was represented by 5 birds picked up from September 21 to 25, indicating a considerable flight. A single Savannah Sparrow on September 21 was the earliest I have ever known. The prize of the collection was an immature Wilson's Warbler, the only specimen known from Florida. It is now in the Biological Survey collection.

Besides the early arrivals just noted, a Golden Plover seen on September 21 was unprecedentedly early; and Blue-winged Teal on August 30 and White Pelican on September 17 were the earliest I have ever known. From the northern part of the county, Mrs. A. L. Whigham reported Blue-headed Vireo on September 21, 22, and 23, sixteen days earlier than ever before recorded; and Ruby-crowned Kinglet on October 9, equaling its previous earliest date. Other arrival dates, well within normal, include: Blue-winged Warbler (rare) and Oven-bird, September 11; Blackburnian Warbler (rare), Magnolia Warbler, and Catbird, September 18; Pigeon Hawk, September 19; Nelson's Sparrow, September 21; Duck Hawk (very rare), September 25; Veery, September 28 (Mrs. Whigham); Olive-backed Thrush, September 30 (Mrs. Whigham); Short-billed Marsh Wren, October 1; Phoebe, October 2; Scarlet Tanager, October 6 (Mrs. Whigham); Yellow-bellied Sapsucker (Mrs. Whigham), Pintail, Coot, Arkansas Kingbird (very rare), and House Wren, October 7; Herring Gull, Tennessee Warbler (rare), and Swamp Sparrow, October 9; and Palm Warbler, October 15.

Of departing migrants, Snowy Egret and Crested Flycatcher, both last seen on October 2, were the latest ever known. Other departure dates, well within normal, include: Mississippi Kite, August 28; Least Tern, September 5; Purple Martin, September 7; Cabot's Tern, September 11; Chuck-will's-widow, September 13; Acadian Flycatcher, September 18; Bank Swallow, September 19; Kingbird, September 21 (Mrs. Whigham); Black Tern, October 1; and Louisiana Heron, October 7.

By far the latest known breeding of the Wilson's Plover relates to a brood of 4 young, well grown and very active on foot but unable to fly, seen on September 2. The parents had presumably left at the usual time, late in August, for they were not seen at any time with the young. Two of the young birds could make short flights on September 13 and all were capable of flight on September 18, the last day they were seen.—Francis M. Weston, *2006 E. Jordan Street, Pensacola, Fla.*

Put-in-Bay (Ohio) Region.—With the exception of the cold, stormy weather which prevailed September 7 to 21, the period was warm, notably so in the early part of October. Despite the dry weather of August, water-levels in Lake Erie and in most of the inland lakes continued to be high. All observers agree that the shore-bird flight was below normal. At Pymatuning Lake, McLaughlin found relatively few individuals and no species of exceptional interest. Most of the few notable records in this group of birds come from the Toledo area: a Marbled Godwit on September 4 (L. W. Campbell), Knot on September 15 (Hicks), and Northern Phalarope on September 16 (B. R. Campbell). A Western Willet was seen at Baybridge on September 15 (Hicks), and Wilson's Phalarope, of very infrequent occurrence inland, was reported from Newark on September 17 (Claugus).

Among the Ducks there was apparently considerable southward movement by mid-September. Migration was noted, not only in the Lake Erie district, but also at Salem (Baker) and Newark (Claugus). The flight included chiefly Pintail, Blue-winged Teal, and Baldpate, with a few records of Green-winged Teal and Wood Duck. Baldpate were reported in unusual numbers from Pymatuning by McLaughlin, who estimates that no less than 2500 were present on October 8. A single Surf Scoter, seen at Put-in-Bay on September 30 and October 2, provides a remarkably early date for a species rarely seen in Ohio. The close of the period finds few diving Ducks present, nor has there been any marked flight of Geese.

The fall migration in Ohio seems to have involved unusually large numbers of many species of Warblers and Thrushes. Most

frequent among the August arrivals in various localities were the Magnolia, Chestnut-sided, and Cape May Warblers, Northern Water-Thrush and Gray-cheeked Thrush. A number of observers in northern and central Ohio comment on the abundance of the Cape May Warbler. At Put-in-Bay, during the peak of the Warbler migration—September 14 to 17—the Cape May was outnumbered only by the Black-poll and Black-throated Green. Black-polls seem to have been common everywhere. Among the scarcer species the Connecticut Warbler was noted as early as September 5, and as late as October 2, at Salem (Baker), while other records within this period are available from Toledo, Put-in-Bay, Canton, and Columbus. Rather a surprising number of localities are represented in the records for the Orange-crowned Warbler which has been considered a relatively rare species in Ohio until recent years. The earliest report is that of one individual seen at Newark on September 16 (Claugus) and the latest record comes from Put-in-Bay, October 12. Between these extremes, and mostly during the first few days of October, are records from Toledo, Canton (Ball), Columbus, and Salem.

At Put-in-Bay the Red-breasted Nuthatch appeared on September 1 and was present almost daily until October 10, with a maximum of 18 individuals on October 2. At Little Cedar Point, near Toledo, 26 individuals were seen on September 15 (Hicks), but other observers seem not to have noted the species in unusual numbers although it was present in nearly every locality from which reports are available. Another bird of somewhat sporadic appearance in the region, the Pine Siskin, has been seen in a few localities: first in northern Greene County on October 1 (Burr) and also at Put-in-Bay and at Pymatuning Lake on October 8 (Renneckar).

From Dayton come records of 2 late nests of the Mourning Dove; a bird was observed nest-building on August 28, and young left another nest on September 25 (Blincoe). At Salem, Goldfinch fledglings were being fed by parent birds on October 2 (Baker).

The Purple Martin roosts near Put-in-Bay, which included not less than 5000 birds in late August, dwindled rapidly after September 1, and the last Martins were recorded on September 16. Among the more interesting dates of departure are the following: Black Tern, September 11 at Conneaut (Baker); a late Kingbird seen near Toledo on October 16 (Campbell); White-eyed Vireo and Scarlet Tanager at Scioto Forest on October 1 (Chapman); Indigo Bunting at Yellow Springs on October 11 (Burr); Alder Flycatcher at Dayton on August 26 (Blincoe). No Chimney Swifts were seen at Put-in-Bay after September 16, but roosts elsewhere in the state were occupied much later. Dates of departure from representative localities are: Canton, September 28 (Ball); Newark, October 8 (Claugus); Dayton, October 5 (Blincoe); Columbus, October 9 (Hicks); Yellow Springs, October 10 (Burr); and Portsmouth, October 13 (Roth).

Dates of arrival for winter species are for the most part about normal. An early Brown Creeper was reported at Little Cedar Point on September 15 (Hicks) and a flock of 12 Lapland Longspurs appeared on October 15, also near Toledo (Campbell).—C. F. WALKER, *Stone Laboratory, Put-in-Bay, Ohio.*

Minnesota Region.—August weather was about as usual in respect to temperature but with rainfall somewhat above normal in the southeastern part of the state and deficient in the northwestern part. The fall as a whole has been unusually mild with no frost thus far in the southern part of the state. Farther north there was a cold spell from September 17 to 20 with below freezing temperatures, ice-fringed lakes, and skits of snow in places. Fall garden flowers have remained bright and gay, and on October 13 marsh marigolds were in bloom for a second time near Minneapolis.

Mrs. Frances S. Davidson, of Minneapolis, who is in the field almost every day, writes of the fall migration as follows: "The season has been unusually interesting because of the abundance of migrants and the length of their stay. There were, however, no notable Warbler waves. Hummingbirds were more numerous than they have been since the sand-storms of 1934-36, but Sparrows, except for the White-throats, have been in small numbers. White-crowns and Harris's were particularly rare, and Fox Sparrows few and scattered. Vireos of all

kinds, Grosbeaks, Towhees, and Chickadees have been unusually plentiful, but the outstanding migrants have been the Purple Finches. From September 27 to October 10 they were present in the greatest numbers I have ever known and from October 5 to 8 they rose on every hand in crowds like Juncos. Most of them were in dull plumage, many very light indeed, but every flock had at least one brightly colored male." In a list of fall migrants submitted by Mrs. Davidson are the following late dates: Blue-headed Vireo, October 10 (aver. October 2); Chestnut-sided Warbler, October 5 (latest September 26); Oven-bird, October 7 (average September 30); Scarlet Tanager, October 12 (average September 19), and Towhee, October 11 (average October 6).

Miss Jilson reports for Frontenac for late August and early September that the shorebird migration was light and that the Warblers were scarce, though she lists 16 species of the latter. Blue-gray Gnatcatchers, bred in the vicinity, were numerous.

Mrs. C. E. Peterson, of Madison, Lac qui Parle County, reports 4 Arctic Towhees at that place, 2 of which she trapped and banded. One of the trapped birds had red eyes and the other 'amethyst.' In adult Arctic Towhees received by the museum, in the flesh, the iris was red like the eastern or so-called Red-eyed Towhee. Mrs. Peterson has again this fall banded a large number of Lincoln's Sparrows, the first on September 10. Also 74 Harris's Sparrows, which Mrs. Davidson found scarce at Minneapolis.

Miss Olga Lakela reports Golden, Black-bellied, and Semipalmated Plovers on Minnesota Point, Duluth, on August 24, and Mrs. Olin, Ruddy Turnstones near Duluth on September 11.

September 20 was a rather late date for a Mourning Dove's nest at Minneapolis containing young a week old.

Since the last article many additional reports of the American Egret in southern Minnesota have been received. Warden Nordeen, of Red Wing, reports seeing a flock estimated at 100 birds going to and from a roosting-place near Prairie Island in the Mississippi River Valley, just below Hastings. The most northern record is of a single bird seen by Miss Lilian Boettcher at Lake Francis, Isanti County. The mild weather induced the Egrets to remain late. Dr. Luedtke saw 11 in Martin County on September 29, and Mr. Warren Nord, 8 or 9 at Prairie Island on October 1. There are probably still later dates. So the accumulated evidence shows that the American Egret has passed the summer in southern Minnesota in really large numbers.

Ducks are plentiful locally in good feeding-places on protected areas but the total number is still too small to supply all suitable localities as in years gone by.—Thos. S. Roberts, *Museum of Natural History, University of Minnesota, Minneapolis, Minn.*

Chicago Region.—Summarized weather data for the current period are not available at present and will be included in the next 'Season' Report.

The following table presents noteworthy records for the 'Season' period. In the first section the reported fall arrival dates are given in the second column; the earliest fall records, as given by Ford, Sanborn, and Coursen's *Birds of the Chicago Region*, are listed in the last column. In the second section, latest fall records from the same reference are given in the last column. The third section includes records that fall within previously recorded dates, but because of the comparative rarity of the species, they are given here.

I. Early Fall Records:

Gadwall	9–18	MS	C. O. S.	——
Baldpate	9– 1	MS	Pitelka	9–15
Canvas-back	10–22	MS	Himmel	10–25
Ruddy Duck	9–17	MS	Himmel	10– 6
Osprey	9– 1	MS	Pitelka	9– 3
Northern Horned Lark	10– 3	LP	Nork	10–29
Golden-winged Warbler	8–18	BI	Reuss	8–21
Chestnut-sided Warbler	8–22	LP	Dreuth	8–27
Wilson's Warbler	8–22	LP	Dreuth	——
Clay-colored Sparrow	9–16	LP	Nork	10– 1
White-throated Sparrow	8–21	BI	Reuss	9– 6
Lapland Longspur	9–28	LP	Dreuth	10– 5

II. Late Fall Records:

American Egret	10–22	MS	Himmel	9–17
Little Blue Heron	10– 9	MS	C. O. S.	9–10
Baird's Sandpiper	10–23	LP	Dreuth	10–11
Least Sandpiper	10–11	R	McMaster	10– 2
Dowitcher	10–11	R	McMaster	——
Caspian Tern	10–15	MC	Pitelka	10– 5
Yellow-billed Cuckoo	10–19	LP	Dreuth	10–14
Red-eyed Vireo	10–19	LP	Dreuth	10–12
Chestnut-sided Warbler	10–14	LP	Dreuth	9–29
Connecticut Warbler	10– 1	MS	Himmel	9–30
Rose-breasted Grosbeak	10–15	MS	Johnston	10– 9
Leconte's Sparrow	10–15	MS	Johnston	10–12
Nelson's Sparrow	10–14	LP	Nork	10–13

III. Additional Noteworthy Records:

Double-crested Cormorant	10– 9	MS	C. O. S.
Canada Goose	10–24	LP	Dreuth
Snow Goose	10–22	MS	Himmel
Bald Eagle	9– 5	MS	Nork
Duck Hawk	10–15	MS	Johnston
Pigeon Hawk	9–25	MS	Johnston
Prairie Chicken	8–30	H	McMaster
American Knot	9–29	LP	Nork
Mockingbird	9–27	LP	Dreuth
Pine Warbler	10– 7	LP	Dreuth
Western Meadowlark	8–19	H	McMaster
Montana Junco	10–13 and 10–20	LP	Dreuth

Key to localities: BI, Blue Island; H, Hebron, McHenry County; LP, Lincoln Park; MC, Michigan City, Indiana, beach; MS, McGuiness Slough, Orland; R, Rockford.

Reports of the American Egret and Little Blue Heron, coming chiefly from the McGuiness Slough at Orland, show an unusually high population during late August and early September, the highest single report being 45 American Egrets and 8 Little Blue Herons, September 1 (Pitelka); in addition, 11 American Egrets and 5 Little Blue Herons were seen on the same day at various small sloughs north of Orland in the general Palos region. The numbers of Egrets fell during mid-September, but rose again in late September and early October, as many as 22 Egrets being still present at the Slough on October 9 (C. O. S. field trip).

Franklin's Gulls were noted along Lake Michigan, chiefly at Lincoln Park, on 17 days between August 25 and October 19, the highest single report being 9 individuals, seen October 12 (Nork), and the average being 2 individuals per day observed (Dreuth, Nork, Black, Johnston). A large number of apparently migrating Flickers, including one flock of 180 was observed at Lincoln Park, September 16 (Nork); a flock of about 200 Pine Siskins was noted on the Waukegan Flats on October 8 (Beecher). An immature Great Black-backed Gull was observed in company with several Herring Gulls at Lincoln Park, September 6 (Dreuth). Buff-breasted Sandpipers were recorded at Lincoln Park on 4 days between September 9 and 14 (Dreuth, Clark, Nork); the highest number of individuals was 3, observed on each of the first 2 days. The White-rumped Sandpiper is reported from Lincoln Park, September 1 (Dreuth); a Red Phalarope was obtained on the Waukegan Beach on September 10 (Pitelka), apparently the first record for the region since at least 1902.

From Blue Island, Bartel reports an early flight of Oven-birds, occurring between September 21 and 23, during which time he banded 84 individuals; normally this flight takes place about September 30. Four full-grown Barn Owls were banded at the Oak Hill Banding Station (Blue Island), September 24 (Bartel).

Some noteworthy records from Berrien County, Michigan, follow: Red-bellied Woodpecker and Carolina Wren at Warren's Woods, October 15, and Redpoll, flock of 8, at Bridgman dunes, October 16 (Pitelka); also Horned Grebe, found resting on the beach at Bridgman, October 16 (Erie).—Rudyerd Boulton and Frank A. Pitelka, *Field Museum, Chicago, Ills.*

St. Louis Region.—The dry spell of late August, that followed a normal summer season, continued all through September. The Weather Bureau here gives this September the distinction of being the warmest and driest on its records, the few much-needed rains being soft and steady. October has also been unusually warm and dry. A few mild frosts in October served to hasten the fall of shriveled leaves that normally shed early, but late October finds the woodland radiant with the richest blend of gorgeous colorings we have seen for years. The persimmon trees are loaded with fruit but there is a scarcity of acorns.

Through George E. Moore, of Lebanon, comes report that Nighthawks were at the peak of their migration flight on September 5, when thousands were sighted along the road from Lebanon to Bennett Springs Park. A drop in the temperature on September 19 called for fire in the heating plant of the Lebanon school, and the smoke kept an assembly of over a thousand Chimney Swifts from their usual roost in the tall chimney. They circled around until after dark but, with the exception of a small number of stragglers, have not been seen since. By October 12 the last of these was gone. Ducks and shore-birds have been few and scattered and no migrating Hawks observed. The first Herring Gull of the season was reported on September 30. Mr. Moore also mentions a partially albino English

Sparrow with white crown. P. J. Smith, Springfield, reports the departure date for some 3000 or more Martins, that had been assembling, was August 16. At Lebanon the Martins were gone by August 24.

Wayne Short reports better than average numbers of Sandpipers this migration season in the St. Charles County marsh area, with Yellow-legs and Killdeer abundant, the Killdeer particularly so, with some 250 on a few Maries Croche flats August 17, and as many as 100 Pectoral Sandpipers the same date. The first return date for the Semipalmated Plover was August 16, and for the Greater Yellow-legs, August 21. Unexpected was the unusual find of 3 Long-billed Dowitchers on August 16, for these birds are scarcely ever seen here in the fall. Another surprise was the Wilson's Phalarope at Maries Croche on August 30, for this bird is not found here in the fall, and very rarely in the spring. Mr. Short and Tom Kirksey sighted the Stilt Sandpiper (not common here) on August 19 and again on the 27th. Short and Frank Watson, of Clayton, saw 2 Caspian Terns at Creve Coeur on September 22. Hawks, so long missing during a long series of field-trips, were in the air again, Frank Watson reporting 21 Broad-wing, 3 Cooper's, 1 Sharp-shinned, 2 Ospreys, and the ever-scarce Duck Hawk, near Clayton on September 20, while on the 22d, Short and Watson saw 18 Broad-winged Hawks in flight at Creve Coeur Lake. At Horseshoe Lake, Miss L. R. Ernst found 4 Yellow Rails, Blackburnian Warblers in late August, and the Connecticut Warbler on September 20.

After an intermission of several years the erratic Wood Ibis passed through this area again. On September 5 Richard Grossenheider, of St. Louis, saw 7 near Freeburg, Ills. (about 45 miles southward from St. Louis). Returning with Wayne Short, Tom Kirksey, and Miss Ernst on September 11, he counted 16 in all, while at New Athens, Ills., C. T. Black of Champaign, Ills., reports seeing 1, noon, August 29, 6 more at 4.30 P. M., 5 miles from there, 9, and later an additional 11 at 5 P. M. over the bottoms 2 miles away, and 16 at 6 A. M., on the 30th. At the same place he found Pileated Woodpeckers at five points in the bottoms. J. W. Cunningham, Kansas City, observed a male Hooded Warbler at Sunshine Lake. This is one of the very few records of the Hooded Warbler in that area. Mrs. C. S. Stones, of Webster Groves, saw 3 Pileated Woodpeckers in the tall timbers near the Rockhill Road, just south of Webster Groves. This is the closest approach to the neighborhood of Webster Groves noted in over 12 years.—STERLING P. JONES, *Webster Groves, Mo.*

Rio Grande Delta Region.—Two additional floods have come down the Rio Grande since the one mentioned in the last report. Consequently, all ponds and lakes in the river bottoms are filled to overflowing as are the prairie ponds between the river and the Boca Chica Road. In sharp contrast the prairie ponds farther north, which did not receive flood-water, are in the poorest condition that has been known for some years. Tular Lake, a favorite feeding-place for Redheads near Port Isabel, is completely dry, and even Loma Alta Lake has been reduced to several shallow, rapidly dwindling ponds. The first light 'norther' of the fall came in the afternoon of September 15, which seems to be about the average date for this event. The 'high pressure' condition lasted for a week or more and brought the usual wave of migrants. Hot weather experienced during October materially slowed down the migration; however, a few new arrivals were noted even during this time.

The heaviest migration of Red-shouldered Hawks ever reported to the writer by coöperators took place in the western part of the region the latter part of September. Arthur Hale reported the first flock (30-40) about 7 miles west of Mission on September 11, and the largest flock (estimated at 3500) one-half mile east of Mission on September 20. A flock of 200 was reported at Edinburg on September 30 by Stanley Mulaik, and a flock of 1000, 4 miles south of Edinburg was reported the same day by Mrs. F. W. Rompf (these last described as Buteos smaller than Swainson's). Mrs. Frank Denzer reported a flock of 200 Hawks (which she supposed were Broad-winged) at Alamo on September 20. In each case the observer reported the same behavior—a circling or 'swarming' at altitudes estimated from 200

feet to "very high" and then a rapid flight southward. In Cameron County Hawks have been relatively scarce and no migrating flocks have been reported.

Arrival dates for the fall migration in the Mission area sent in by Mr. Hale are as follows: August 21, Louisiana Water-Thrush and Spotted Sandpiper; August 24, Bank Swallow; August 31, Swainson's Hawk, Northern Crested Flycatcher, Olive-sided Flycatcher, Kingbird, Baltimore Oriole, Yellow-throated Vireo, Warbling Vireo, Wilson's Warbler, Canada Warbler, Mourning Warbler, Northern Water-Thrush; September 1, Phoebe, Scissor-tailed Flycatcher; September 5, White-rumped Shrike, Indigo Bunting; September 8, Chuck-will's-widow; September 11, Least Sandpiper, American Osprey, Marsh Hawk; September 15, Sparrow Hawk, Bullock's Oriole, Blue-headed Vireo; September 18, Wilson's Snipe, Red-backed Sandpiper, Blue-winged Teal, Pintail; September 21, Broad-winged Hawk, Grasshopper Sparrow; September 24, Hudsonian Curlew; September 25, Gadwall, Long-billed Dowitcher, White-rumped Sandpiper, Greater Yellow-legs, Cooper's Hawk, Vermilion Flycatcher; September 26, Western House Wren; October 3, Lincoln's Sparrow; October 6, Mississippi Kite; October 9, Yellow-crowned Night Heron, American Bittern, Lesser Scaup, Green-winged Teal; October 10, Rio Grande Meadowlark. Mrs. Denzer reported the Vermilion Flycatcher at Alamo 5 days sooner than the record of Mr. Hale. Mr. Mulaik reported Franklin's Gulls, October 2, at Edinburg.

A few records from Cameron County are: August 21, Semipalmated Plover, Olive-sided Flycatcher; August 28, Buff-breasted Sandpiper, Pectoral Sandpiper, Least Sandpiper, White-rumped Shrike; September 4, Red-eyed Vireo; September 18, Pigeon Hawk, Ruby-crowned Kinglet, Nashville Warbler; October 2, Solitary Sandpiper.

Some 'last seen' dates given by Mr. Hale are as listed: September 1, Black-bellied Tree-duck; September 20, Orchard Oriole, Blue Grosbeak; October 1, Alder Flycatcher, Sennett's Oriole, Summer Tanager, and Chat.

There seems to have been a more concentrated migration of Purple Martins through Cameron County than usual. The peak of the flight was reached about September 11, when thousands were observed on the wires along the Boca Chica Road. On the same wires were also perched several hundred Bank Swallows and several scores of Barn Swallows; however, the combined total of these was less than 10 per cent of the number of Martins.—L. Irby Davis, *Harlingen, Texas*.

San Francisco Region.—Nesting activity is so infrequent here in the August-October period that any evidence of it is worthy of mention. Care of young by parents was reported as follows: At Lake Merced, on October 7, Williams saw an immature-appearing Western Grebe begging in attitude and notes and seeming to receive food from an adult. At Monterey, on September 13, he saw an adult Pied-billed Grebe, decidedly solicitous and accompanied by 4 fully grown young. At Carmel, young out of the nest were being fed as follows: Barn Swallow, August 22; House Finch, August 21; White-crowned Sparrow, August 14.

On September 12, on Oxford Street, in Berkeley, Rodgers discovered a young Lawrence's Goldfinch just at nest-leaving time, around 8 A. M. Mrs. Allen observed a Brown Towhee feeding a grown youngster at Boulder Creek on August 15, exactly one year after a similar record for the same vicinity. On September 15, at Vallejo Reservoir, she saw an adult Ruddy Duck, followed by 7 young.

Last occurrences for summer birds have not been exceptional. Allen's Hummingbird was seen last in Golden Gate Park on September 15 (Miss Werner). Wood Pewee and Western Flycatcher, recorded in the park September 28 and October 2 (Mrs. Stephens), were last seen in the Santa Lucia Mountains on September 14 and 30, respectively (Linsdale). C. W. Michael identified Traill's Flycatcher in Golden Gate Park on September 3, 5, and 9; Mrs. Allen saw many on September 15 at Vallejo Reservoir. Purple Martin, 2 at Boulder Creek, August 21 (A.). Cliff Swallow, Carmel, September 4 (Williams); 50 (est). at Alvarado, September 13 (Parmenters). Russet-backed Thrush, Berkeley, September 3 (A.); Boulder Creek, October 2 (A.); Carmel, September 4 (W.); Santa Lucia Mountains, September 22 (L.). House Wren, Berkeley,

singing on October 14 (A.). Warbling Vireo, Golden Gate Park, September 10 (Werner); Santa Lucia Mountains, September 27 (L.). Yellow Warbler, San Francisco, October 9 (S.); Wild Cat Creek, Richmond, 24 on October 9 (Brock). Western Tanager, Berkeley, 3 on August 23 (A.); San Francisco, September 1 (Kirker); Santa Lucia Mountains, October 1 (L.).

A type of fall migration record not often made in the region was reported by Rodgers. Beginning September 26, on four mornings he walked for 15 minutes, around 5 A. M., in the center of Berkeley. During these walks he heard notes of land-birds overhead almost constantly (one every 15 to 30 feet as he walked along) and these seemed all to be made by the same kind of bird, he thought White-crowned Sparrow. Four to seven or eight times in each walk Rodgers heard shore-birds, some of which he recognized as Killdeer; the others he could not identify. On another 15-minute walk, on October 12, Rodgers heard Killdeer calls five or six times, but he heard no other flying birds. This observer also reports as a frequent observation that arriving migrants are detected in the Berkeley hills several days earlier than on the lower flatter area.

An exceptional migrant was a Black and White Warbler observed on September 28 by Miss Werner and C. W. Michael in Golden Gate Park.

Mrs. Allen, on September 15, saw Robins eating fruits of wild currants in Berkeley. Items of this kind have been sought eagerly by persons engaged in the study of blister rust of pine trees.

Concerning the Sooty Shearwater, the Parmenters write that they observed the birds on 39 different days from their first appearance on May 6 to September 28, the last. That day they had to go as far south as Martin's Beach. The largest raft where the birds were feeding [100,000 (est.) birds, September 13] was off Thornton. They add that the Bureau of Fisheries (newspaper report) states that the sardine fishermen have had a near-record catch of sardines in northern California. This large run of fish may provide the reason why the Shearwaters have been so constantly in this vicinity near shore.

Wintering land-birds seem to have arrived at normal dates, but in less than their usual numbers. Some first mentions: Band-tailed Pigeon, Potrero Meadows, Marin County, 25 on October 9 (Sibley); Santa Cruz Mountains, 20 on October 10 (E. L. Sumner); Saratoga Summit, 50 (est.) on October 2 (Allen); Santa Lucia Mountains, October 12 (Linsdale). Red-breasted Sapsucker, Mill Valley, October 9 (Sibley); Santa Lucia Mountains, October 13 (L.). Say's Phoebe, Carmel, September 12 (Williams); Santa Lucia Mountains, September 23 (L.). Hermit Thrush, Golden Gate Park, September 15 (Michael); Berkeley, October 8 (Allen); Santa Lucia Mountains, September 30 (L.). Golden-crowned Kinglet, Berkeley, heard on October 12 (A.). Ruby-crowned Kinglet, Berkeley, October 10 (Rodgers) and 12 (A.); Santa Lucia Mountains, September 21 (L.). American Pipit, Mountain View Marsh, October 5 (A.); Oakland, October 13 (Brock). Winter Wren, Golden Gate Park, October 1 (Stephens). Cedar Waxwing, Berkeley, September 23 (R.); Santa Lucia Mountains, September 30 (L.). Audubon's Warbler, Berkeley, October 10 (R.). Townsend's Warbler, Berkeley, October 10 (R.); Carmel, September 9 (Williams); Santa Lucia Mountains, September 26 (L.). Golden-crowned Sparrow, San Francisco, September 22 (Millard). Fox Sparrow, San Francisco, September 17 (Millard).

Only a few records have been selected from a great many pertaining to water-birds: Pacific Loon and Red-throated Loon, Tomales Bay, October 3 (Parmenters); White Pelican, Dumbarton Bridge, first on August 22, 1000 on October 1 and 2 (A.); Brown Pelican, Cliff House Rocks, large numbers returned first week in September (P.); White-faced Glossy Ibis, Pacific Grove, 1 on August 19 (Williams); Wood Duck, 11 at San Pablo Reservoir, October 1 (A.); Ring-necked Duck, 50 (est.) at Searsville Lake and 5 at Lake Merced, October 8 (P.); Red-breasted Merganser, 1 at Sears Point Toll Road, August 23 and October 12 (P.); Lesser Yellow-legs, Mountain View Marsh, 1 on October 1, 6 on October 5 (A.); Pectoral Sandpiper, 3 at Sears Point Toll Road, October 10 (P.); Short-billed Gull, 2 at Richardson Bay, October 3 (P.).—JEAN M. LINSDALE, *Museum of Vertebrate Zoology, Berkeley, Calif.*